

39501-GENERAL 01.02.00.0003

A Report Prepared For

Department of the Navy Southern Division Naval Facilities Engineering Command 2155 Eagle Drive North Charleston, South Carolina

FINAL VERIFICATION REPORT NAVAL CONSTRUCTION BATTALION CENTER GULFPORT, MISSISSIPPI

HLA Job No. 2176,093.12

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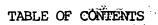
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July 7, 1988



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I EXECUTIVE SUMMARY

Harding Lawson Associates (HLA) has conducted a verification study of seven potentially contaminated waste disposal sites at the Naval Construction Battalion Center at Gulfport, Mississippi (NCBC Gulfport) or the Activity. This work was performed at the direction of the Department of the Navy, Southern Division Naval Facilities Engineering Command (SODIV), under the Naval Assessment and Control of Installation Pollutants (NACIP) program.

Six potentially contaminated sites were recommended for verification study at NCBC Gulfport during the Initial Assessment Study (IAS) previously performed by Envirodyne Engineers, Inc. In general, the potentially contaminated sites included abandoned landfill/waste disposal areas, fire fighting training areas and hazardous materials storage areas.

The Verification Work Plan for NCBC Gulfport was developed by HLA to include the six recommended sites and one additional site recommended by HLA. The Site Specific Job Health and Safety Plan for the verification study at NCBC Gulfport was developed by HLA to meet the requirements of the work plan. Both plans were approved by SODIV.

The field investigation was conducted from March 5, 1987 to May 5, 1987. Work performed during the field investigation included site reconnaissance, surface geophysical surveys, soil borings and sampling, groundwater monitoring well installations, and sediment, soil and water sampling. Laboratory chemical analyses were performed from March 26, 1987 to June 5, 1987, on sediment, soil, surface water and groundwater samples. A laboratory quality assurance/quality control report was prepared for the chemical analyses.

Results of the verification study at NCBC Gulfport indicate that a Characterization Study will not be required at any of the seven identified sites. Some additional work is recommended at certain sites, as an extension of the Verification Phase. In the event that results from the additional Verification Studies indicate contamination, a Characterization Study could be recommended at that time. The following are significant findings from HLA's investigation at NCBC Gulfport:

- 1. Regional groundwater flow (downgradient) in the surficial aquifer is generally presumed to the south as stated by the IAS report and several other researchers. However, observed local groundwater flow (downgradient) in the vicinity of the seven sites investigated at NCBC Gulfport, is apparently toward Canal No. 1 and generally to the north.
- 2. Surface water flow at NCBC Gulfport is generally to the north via Canal No. 1. Numerous minor tributary streams and ditches drain NCBC Gulfport and flow into Canal No. 1. Surface water flow rates are generally very low or stagnant but increase somewhat in response to precipitation events.

- The direction of surface water flow and groundwater flow in the surficial aquifer generally coincide, suggesting a close interrelationship between surface water and shallow groundwater at NCBC Gulfport.
- 4. No significant chemical contamination of the Activity potable wells is indicated. Phase separated hydrocarbon, possibly lubricating oil, was observed in Activity Wells Nos. 2 through 5. Very low concentrations of organic contaminants were detected in all wells, as well as at one location in the base potable water supply system. In particular, very low concentrations of toluene were detected in all Activity potable wells. Confirmation of the concentrations and identification of possible sources of the phase separated hydrocarbon and organic contaminants is recommended.
- 5. No significant chemical contamination was indicated by the laboratory analyses of sediment, soil and water samples from Sites 1, 2, and 6; however, very low concentrations of organic contaminants and metals were detected in one groundwater monitoring well at each site. Confirmation of the concentrations and identification of possible sources of these organic contaminants is recommended.
- 6. No significant chemical contamination was indicated by the laboratory analyses of sediment, soil and water samples from Sites 3, 4, and 5. No organic contaminants were detected above their analytical method detection limit.

Based on the findings of our field and laboratory investigation and the stated goals of the NACIP program, we recommend the following additional tasks be performed, as a continuation of the Verification Phase of the Confirmation Study.

- 1. All Activity potable wells (Well Nos. 1 through 5) should be resampled including sampling of phase separated hydrocarbon previously observed in each well. Chemical analysis of groundwater should include all constituents specified in the Verification Work Plan, in particular, EPA priority pollutants (Methods 624 and 625). Hydrocarbons samples should be analyzed for toluene and other solvents.
- 2. The phase separated hydrocarbon observed in each well should be removed from the groundwater surface and its source should be identified. In the interim, the operation of the potable wells should not cause excessive drawdown in any well and the possible pumpage of hydrocarbon by the well pumps.

- 3. Additional groundwater monitoring wells should be installed at Sites 1 through 5. The direction of groundwater flow in the surficial aguifer was different than anticipated when the groundwater monitoring well network was originally conceived. Due to the extent of each site, additional wells should be located downgradient of the landfill/waste disposal areas. Prior to selection of additional groundwater monitoring well locations, quarterly monitoring of groundwater levels existing wells is recommended, to characterize the seasonal groundwater flow regime in the surficial aquifer. Based on the groundwater data collected in the spring of 1987, for Sites 2, 5, and 7, the additional wells should be located generally to the west of the sites. For Sites 3 and 4, the additional wells should be located generally to the north, and for Site 1, to the northwest. All groundwater monitoring wells should be constructed according to the specifications of the Verification Work Plan.
- 4. Concurrent with installation of additional groundwater monitoring wells, geotechnical and/or hydrogeological investigations are recommended to characterize the underlying clay.
- 5. The additional groundwater monitoring wells installed at Sites 1 through 5 should be developed and sampled according to specifications in the work plan. Chemical analyses of groundwater should include all constituents specified in the Verification Work Plan.
- 6. All existing groundwater monitoring wells at Sites 1, 2, and 6 should be resampled. Chemical analyses of groundwater should include all constituents specified in the Verification Work Plan.
- 7. After the new and existing wells are sampled and analyzed, a risk assessment, based on water quality standards, is recommended, using all Activity groundwater chemistry data.
- 8. Decontamination water sources (base potable water and commercially available deionized water) should be resampled. Chemical analyses of the water should include all constituents specified in the Verification Work Plan. During the course of any additional field investigations, alternate sources of decontamination water should be used.
- 9. All drill cuttings, well development, and sampling and decontamination wastewater temporarily stored in drums at NCBC Gulfport should be disposed of properly. All waste/materials generated during past field investigations should be considered nonhazardous wastes and should be handled by NCBC Gulfport according to their normal disposal procedures.

II INTRODUCTION

This report presents the findings of the NACIP Verification Study at NCBC Gulfport, Mississippi (see Plate 1), which was performed under the NACIP program. This work was performed for SODIV under USN Contract N62467-85-D-0637 original, and Amendment Nos. 1, 2, 5, and 6.

A. Background Information

As defined in the NACIP program, Verification is the first step in a Confirmation Study. The purpose of Verification is "to determine whether specific toxic and hazardous materials identified in the IAS are present in concentrations considered to be hazardous."

The IAS for NCBC Gulfport was performed for the Naval Energy and Environment Support Activity (NEESA) by Envirodyne Engineers, Inc. (Envirodyne, 1985). Nine potentially contaminated sites were identified, including abandoned landfill/waste disposal areas, fire fighting training areas and hazardous materials storage areas. Six of the nine sites (Sites 1 through 6) were recommended for Confirmation Study under the NACIP program. Three sites (Sites 7 through 9) were not recommended for Confirmation Study. Site 8 is already under remedial action by the U.S. Air Force, and is not included in the scope of the Confirmation Study. HLA recommended that Site 7 be investigated based on its proximity to Site 2 and the relative ease of incorporating it

into the field effort. Detailed descriptions of the identified sites and their respective histories are presented in the IAS report (Envirodyne, 1985).

HLA submitted the Final Verification Work Plan for NCBC Gulfport to SODIV for approval on January 13, 1987 (HLA, 1987a). Field investigations at these potentially contaminated sites required development of a comprehensive site safety and health monitoring plan. HLA submitted the Final Site Specific Job Health and Safety Plan for NCBC Gulfport, including our Generic Health and Safety Plan, to SODIV for approval on February 20, 1987 (HLA, 1987b). The work and safety plans were approved by SODIV and notice to proceed with the Verification Study was verbally issued on February 20, 1987.

During the course of the investigation, Amendments No. 5 and 6 to the original contract were authorized. In general, these amendments expanded the scope of the services originally proposed to include additional chemical analyses of groundwater samples, collection of additional groundwater samples, additional surface geophysical surveys, and execution of all field efforts at higher levels of personal protection than originally proposed (HLA, 1987b). The change in scope of services was made to satisfy EPA and SODIV requirements for chemical analyses and job safety, respectively.

B. <u>Scope of Services</u>

The purpose of this investigation was to verify the existence of potential contamination at various past waste disposal sites at the Activity. Geophysical investigations were performed to approximately delineate the boundaries of subsurface areas containing possible contaminants and relatively high concentrations of metal (i.e., abandoned landfill areas). The surficial aquifer and potable water supply wells were sampled for the presence of suspected contaminants, and selected surface areas were sampled for possible contamination. The scope of services for this investigation included:

- 1. Performing a site reconnaissance to identify physical features of the site and set up geophysical survey grids;
- Geophysical surveying with a Scintrex-IGS combination magnetometer system and VLF (very low frequency) electromagnetic sensor, and a Geonics EM-31D Electromagnetic unit;
- Installing eighteen 2-inch-diameter groundwater monitoring wells;
- 4. Measuring depth to groundwater surface and collecting groundwater samples from groundwater monitoring wells and potable water supply wells;
- 5. Collecting sediment, soil and surface water samples from selected areas;
- 6. Analyzing samples for selected chemical and physical parameters, and U.S. Environmental Protection Agency (EPA) priority pollutants specified in the final work plan; and
- 7. Interpreting and reporting the findings, including recommendations for any additional investigations.

III FIELD METHODS AND PROCEDURES

A. Site Reconnaissance

Site reconnaissance was conducted at each site at the Activity during the period from March 5, to March 12, 1987. Site reconnaissance included identifying site boundaries, noting physical features, selecting locations for borings/groundwater monitoring wells, and selecting locations for sediment, soil and surface water sampling. Five Activity potable water wells and two Activity production water wells were also examined for suitability for groundwater sampling (i.e., pumping equipment, sampling points, etc.).

Sites 1 through 7 and 9 are located on the west side of NCBC Gulfport, as shown on Plate 2. One Activity potable well and the two Activity production wells are also shown on Plate 2. The other Activity potable wells are in the central and eastern portions of NCBC Gulfport.

The estimated site boundaries were located in the field and existing vegetative cover were noted. The estimated boundaries and vegetative cover were compared with historical aerial photographs (Department of the Navy, 1986) and maps presented in the IAS. Geophysical survey grids were adjusted to cover known areas of concern. Distances between land features (such as streets) and grid stakes were noted to locate geophysical data on site maps.

Boring/groundwater monitoring well locations were initially selected according to information presented in the Verification Work Plan. Locations were adjusted as needed to provide complete geologic and hydrogeologic information and to provide better accessibility. The locations were checked for underground utilities and buried metal, and were reviewed and approved by NCBC Gulfport personnel.

Sediment, soil, and surface water sampling locations were selected in areas believed to best identify any possible zones of surficial contamination. Distances between land features (such as bridges) and sample locations were noted to identify the locations on site maps.

On March 12, 1987, prior to the start of intrusive field investigations, all boring/monitoring well and sampling locations were reviewed in the field and approved by SODIV and the Mississippi Department of Natural Resources, Bureau of Pollution Control (MBPC).

The results of the site reconnaissance are discussed on a site-by-site basis in Section VI.

B. Surface Geophysical Survey

A surface geophysical survey was conducted, concurrent with the site reconnaissance, from March 5 to March 12, 1987, at seven potentially contaminated sites at NCBC Gulfport. The objectives of the survey were to attempt to better define the lateral extent of each

landfill/waste disposal area, and to delineate any localized areas within each landfill/disposal area where relatively high concentrations of buried ferrous metal exist. Initially, the survey grids were based on the approximate locations and configurations of the abandoned landfill/waste disposal areas presented in the IAS report (Envirodyne, 1985). The configurations of the survey grids at each site are shown on Plates 5, 7, 8, 10, 12, 14, and 16. The site conditions ranged from open areas (Sites 3, 4, 5 and 6) to active facilities (Sites 1, 3, 5, and 7) to woodlands (Site 2).

The primary instrument selected for this survey was the Scintrex-IGS (Integrated Geophysical System) with magnetometer and VLF (Very Low Frequency) sensors. This unit is operated by one person and is compact, allowing easy access and operation in dense vegetation. The magnetometer was used to identify the presence of ferrous metal objects (such as steel drums possibly containing hazardous materials) and the VLF was used to locate changes in soil conductivity, possibly representing the difference between former landfill (significantly disturbed) material and natural soil. In addition, a Geonics Model EM-31 Electromagnetic Terrain Conductivity Meter was used to perform utility/buried metal clearance at all proposed boring/groundwater monitoring well locations.

Initially, a 50-foot by 50-foot grid was established at Sites 1 through 6, where intrusive field investigations were planned. A 100-foot by 100-foot grid was established at Site 7, where no intrusive field investigations were planned. The 50-foot by 50-foot grid was selected for Sites 1 through 6 to provide sufficient data spacing to better define the areas of interest on a cost-effective basis. The 100-foot by 100-foot grid was selected for Site 7 to provide a broad data spacing, which was considered suitable for the general screening needed at this site. The overall dimensions of each grid generally extended from 50 to 200 feet beyond the reported site boundaries to account for uncertainty in boundary locations and provide local background data.

Each site was surveyed with the Scintrex-IGS, collecting both magnetometer and VLF data at all grid intersection points. The data for each site was recorded and tabulated, and maps showing trends and anomalous geophysical data were developed. These data and maps are included in the report. All prospective boring/ well locations were investigated with the EM-31 to verify that each location was clear of subsurface utilities and buried metal. Detailed descriptions of equipment, field techniques, and data analysis used during the surface geophysical surveys are presented in Appendix A-1. The results of the survey are discussed on a site-by-site basis in Section VI.

C. Soil Borings and Sampling

Drilling and sampling activities were conducted from March 12, to March 22, 1987. Southwestern Laboratories, Inc. (SWL) of Houston, Texas, provided subcontract drilling, soil sampling and groundwater monitoring well installation services under HLA's direction at NCBC Gulfport. The locations of borings/groundwater monitoring wells at each site are shown on Plates 4, 6, 9, 11, 13, and 15.

Soil boring depths ranged from approximately 15 feet to 30 feet below the ground surface. All borings penetrated alluvium, generally interbedded silts, silty sands and sands. The lower part of each boring generally penetrated a poorly-sorted sand and was terminated in clay.

The borings were advanced by a truck-mounted rig using hollow-stem auger techniques; samples were obtained continuously and/or at 5-foot intervals with a split core barrel or a split-spoon sampler. Each borehole was logged by HLA's field geologist/engineer according to the Unified Soil Classification System (ASTM D 3487-85 and D 2488-84). All drilling and sampling equipment were thoroughly decontaminated prior to the start of drilling activities at each boring/groundwater monitoring well location. All soil samples were scanned in the field with an HNu Systems, Inc. Photoionization Detector (HNu) for volatile organic vapors. Samples with no detectable volatile

organic vapors were placed in clean containers, labeled, and transported to HLA's laboratory in Houston, Texas. Samples containing detectable volatile organic vapors were sealed in clean sample jars, chilled and shipped in coolers to JTC Environmental Consultants (JTC), Rockville, Maryland, for possible analysis pending receipt of results from the specified sediment, soil and water analyses. Detailed descriptions of equipment and field techniques, including logging and decontamination procedures, used during soil boring and sampling are presented in Appendix A-2.

D. Groundwater Monitoring Well Installation

Groundwater monitoring wells were installed in all boreholes concurrent with drilling and sampling operations, from March 12 to March 26, 1987. All wells were installed in accordance with the specifications for well installation provided by SODIV and included in the Verification Work Plan.

The groundwater monitoring wells were installed using a 2-inch-diameter PVC screen and blank casing with a medium sand (ASTM D 422) filter pack, bentonite seal and cement-bentonite grout. Steel casings and concrete pads were installed at each wellhead to protect the above grade PVC well casing. In areas of heavy vehicular traffic, four

concrete-filled steel posts were installed around the well for additional protection. Well construction details and descriptions of subsurface conditions encountered for each groundwater monitoring well are summarized in Table 1 and included in Appendix C.

All groundwater monitoring wells were developed by pumping with a reciprocating diaphragm pump to remove any fine-grained sediments introduced into the wellbore during drilling and well installation to ensure water level response in the well coincides with aquifer water level response. Prior to groundwater sampling, minor amounts of sediments were observed in each well. These sediments were a result of earlier well development. The sediments were removed during presampling bailing and pumping. All well development equipment was decontaminated prior to pumping at each well. Groundwater levels were measured on March 30, 1987, and groundwater elevations were computed for each groundwater monitoring well.

Detailed descriptions of field techniques and equipment used during groundwater monitoring well installation and development are presented in Appendix A-3.

Groundwater monitoring well locations and top-of-casing elevations were surveyed by a Mississippi state registered land surveyor (R.L.S.). Horizontal coordinates for the wells are tied to the Mississippi State Plane. Elevations for the wells are referenced to National Geodetic Vertical Datum (NGVD).

E. Sediment, Soil, and Water Sampling

Sampling activities were conducted from March 26 to March 30, 1987. JTC performed chemical analyses of the sediment, soil, and water samples. Selected additional samples were obtained on April 7, and May 4, 1987 to replace samples that were damaged or disturbed during shipment.

Sediment and surface water samples were collected from drainage ditches and ponds adjacent to the investigation sites (Sites 1 through 6). Two soil samples were collected from areas adjacent to abandoned burn pits (Site 6). Groundwater samples were collected from five Activity potable water wells (Well Nos. 1 through 5) and the eighteen groundwater monitoring wells (Sites 1 through 7). Sampling locations at each site are shown on Plates 4, 6, 9, 11, 13, and 15. Detailed descriptions of field techniques and equipment used during sediment, soil and water sampling are presented in Appendix A-4.

F. Quality Assurance/Quality Control

Rigorous quality control procedures were employed during field and laboratory investigations to ensure that data obtained from field activities and sample analyses were accurate, consistent and representative of actual site conditions.

During site reconnaissance, distance and direction between land features (such as streets and bridges) and grid stakes were measured with a 200-foot fiberglass surveyor's tape and a hand held compass to aid in properly locating geophysical data on site maps.

The Scintrex-IGS unit was tested by the subcontract equipment supplier before and after this project by traversing a natural gas pipeline and comparing data with that obtained by previous traverses with the same unit and several other units. The Geonics Model EM-31 unit was tested before and after this project by traversing three different test areas and comparing data with that obtained from traverses made by seven different new Geonics Model EM-31 units.

During geophysical surveying, two sets of VLF measurements were made from two different transmitters set at two different frequencies at each survey station. Each set of VLF field data was printed out and analyzed daily to identify possible errors in procedures and to evaluate any areas showing unusual measurements. The most accurate and consistent baseline and station VLF data set was selected for

analysis at each site. Baselines located beyond site boundaries were used as a base station to double-check instruments for drift or interference.

During drilling and sampling, all soil samples were examined by two HLA field personnel and logged in the field in accordance with the Unified Soil Classification System.

During well installation, depth measurements (such as well depth, top of filter pack, etc.) were made using a weighted 50-foot fiber-glass surveyor's tape and recorded for each groundwater monitoring well installation. Groundwater level measurements were obtained with a QED Environment Systems, Inc. Model 6000 Static Water Level meter.

Repeated field measurements of temperature, pH and specific conductance were obtained during presampling purging of the well to ensure consistency in samples. Samples were immediately labeled in the field and chain-of-custody forms were prepared. Whenever possible, samples were collected and shipped on the same day. In the event the analytical laboratory could not receive shipments on a given day, samples were collected and held on ice for a maximum of one day prior to shipping. Copies of the chain-of-custody records, which were shipped with each set of samples are included in Appendix F.

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During all field activities, all equipment and instruments were thoroughly decontaminated prior to use at any well or sampling locations. Additional decontamination procedures were performed between each investigation site.

Detailed descriptions of field QA/QC procedures are included in Appendix A.

IV LABORATORY METHODS AND PROCEDURES

All chemical analyses were performed at JTC's Rockville, Maryland laboratory according to U.S. EPA-approved standard procedures. All analytical work was performed in accordance with the JTC QA/QC Plan (JTC, 1987) which included specifications for chain-of-custody, routine duplicate tests, spikes, control samples, trip blanks, and performance and system audits. JTC was certified by NEESA under the NACIP program to provide analytical services on this U.S. Navy project. This certification was performed by Martin Marietta Energy Systems, Inc.

A. Chemical Analysis

Sediment, soil and water samples collected at NCBC Gulfport were analyzed for the parameters specified in the amended Final Verification Work Plan (HLA, 1987a) and are listed in Table 2. The analytical methods used on each sample were in accordance with U.S. EPA or other accepted analytical procedures, as listed in Table 2. Volatile, and acid and base-neutral extractable organics, and pesticides/PCB's analyzed are from the U.S. EPA Priority Pollutant Series. Detection limits for each analytical procedure are also included in Table 2.

B. Quality Assurance/Quality Control

All analytical procedures followed QA/QC guidelines developed by JTC. Each sample was clearly labeled and documented on chain-of-custody forms. Daily equipment calibration was performed to verify

proper performance. Selected methods were tested for applicability and proper performance. Method reliability was continually checked throughout the analyses by periodically testing method duplicates, method blanks, matrix spikes, and matrix spike duplicates (JTC, 1987b).

Results of the laboratory analyses were reviewed and randomly checked by the Laboratory Director and then submitted to the Quality Assurance Officer for inspection. All notebooks, charts, printouts, and review logs associated with the analyses were catalogued and filed for future inspection, if required.

A copy of the final QA/QC report for laboratory analyses is included in Appendix E.

Blank samples and samples of water used for decontamination were collected on April 7, 1987, during the first resampling effort and shipped with other samples to check for cross-contamination. Results of the chemical analyses for the field and laboratory QA/QC samples are summarized in Table 3. Complete chemical analysis results for field and laboratory QA/QC samples are included in Appendix D.

Elevated concentrations of chloroform and dichlorobromomethane were detected in the Decon 1 sample. Decon 1 was collected from a construction water standpipe supplied by the base potable water system. These elevated concentrations could be a by-product of the

base water treatment system (i.e., reaction of organic carbon in groundwater with chlorine from water treatment). Resampling of Decon l is recommended to verify the initial contaminant concentrations detected.

Elevated concentrations of toluene were detected in the Decon 2 sample. Decon 2 was collected from commercially available, bottled deionized water. No apparent explanation is available for the presence of toluene in a deionized water sample. This is most likely a sampling artifact. Resampling of Decon 2 is recommended to verify the contaminant concentration detected. The most likely approach to accurately resample Decon 2 would be to obtain samples of the same commercial brand deionized water from the same retail store.

The elevated contaminant concentrations in the decontamination waters (Decon 1 and Decon 2) have apparently had no effect on the reported results of the chemical analyses of groundwater samples. In the event additional field investigations are conducted at NCBC, alternate sources of decontamination water (Decon 1 and Decon 2) are recommended, pending resampling and confirmation of the original sources.

V REGIONAL GEOLOGY AND HYDROLOGY

A. Geology

Three broad divisions of land-forms, the long leaf pine hills, the coastal pine meadows and the alluvial plains of the larger streams, exist along the Gulf coastal plains (Brown, 1944). The coastal pine meadows, which consist of the Pamlico plain and recent beach and eolian deposits, are of primary interest in the Gulfport area. The plain is nearly flat or gently undulating and locally swampy.

The uppermost stratigraphic formations in the region are the Pleistocene and Recent Alluvium, the Pleistocene Pamlico Sand, and Low and High Terrace Deposits, and Citronelle Formation. These upper units are underlain by the Pliocene and Pleistocene Graham Ferry Formation, and the Miocene Pascagoula and Hattiesburg Formations, and Catahoula Sandstone. Table 4 summarizes the geologic formations found in the Gulfport area (Brown, 1944).

B. Surface Water

Surface runoff in the area is collected and transported to the Gulf of Mexico via streams and bayous, a canal and ditches. Most of the runoff from NCBC Gulfport is collected by a system of ditches which primarily discharge into Canal No. 1, which subsequently drains north off the base to Turkey Creek. The eastern portion of the NCBC

Gulfport drains to Brickyard Bayou. Some runoff from the southern portion of NCBC Gulfport drains into the Gulfport sewer system. Flooding is a potential hazard in the floodplains adjacent to the streams and their tributaries in the area. Most of the major streams have unusually wide flood plains that represent ancestral streams which were larger than the present day streams (Shows, 1970).

In general, surface waters in the area are of good quality, with low total dissolved solids, low iron content, and a pH between 4.5 and 7 (Shows, 1970). Pollution is a problem on some streams and has been attributed to oil production, industrial wastes and improper sewage treatment.

C. Groundwater

The surficial aquifer in the Gulfport area consists of Pamlico sand, and Recent deposits ranging in thickness up to 100 feet (Brown, 1944). The water bearing units are underlain by clay and silt in the lower portions of the Pamlico plain. The surficial aquifer is unconfined, and contains water of generally poor quality.

The deeper groundwater has been divided into two major systems:

(1) the Citronelle Formation and, (2) the Miocene aquifer system,
which is composed of the Graham Ferry, Pascagoula, Hattiesburg and
Catahoula Formations (Shows, 1970). The Citronelle is unconfined over

most of Mississippi. However, in the extreme southern portion of the state (i.e., the Gulfport area), the unit is confined. The Miocene system is confined and consists of irregular sand layers.

Water from the Citronelle aquifer is generally of good quality, ranging from soft to moderately hard, with a low pH, and a low mineral content (Shows, 1970). The Miocene aquifers have soft, acidic to alkaline waters of good quality with low to moderate total mineral content. In some areas, a high iron content has been observed in various aquifers. In much of Southern Mississippi, saltwater intrusion has occurred in the lower Miocene aquifers. The base of the fresh water in the Gulfport area is approximately 2,500 feet below sea level.

The Citronelle Formation is the shallowest significant source of water. Many domestic and municipal water wells are completed in this aquifer (Shows, 1970). However, in the coastal region, much higher yields can be obtained from the Miocene aquifers and the majority of the wells in this area are completed in the Miocene system.

VI LOCAL GEOLOGY AND HYDROLOGY

A. <u>Geology</u>

Strata encountered during the drilling program at NCBC Gulfport consisted of unconsolidated sediments. The uppermost water-bearing stratum is a tan, gray and brown sand unit with varying amounts of clay and silt. This unit generally was encountered at the ground surface (except where covered with several inches of topsoil). The sand layer extends to depths ranging from 13 feet at groundwater monitoring well GPT-2-3 to 30 feet at well GPT-2-1. Descriptions and observed thicknesses of this unit generally agree with those previously developed for the Pamlico Sand. A soft, fat clay with varying amounts of sand underlies the sand unit.

The clay layer was generally massive, very moist and plastic, with no evidence of blocky structure. It appears to be an impermeable or semi-permeable layer limiting downward groundwater movement. All borings were terminated within three feet after encountering this unit except boring GPT-3-1 which extended 13.6 feet into the clay to obtain an estimate of the thickness of the clay. All groundwater monitoring wells were completed in the sand unit. In general, a portion of the screened interval of each well, about one to two feet, extended into the underlying clay layer. About 13 feet of the screened interval of well GPT-3-1 extended into the clay layer.

B. Surface Water

Surface water movement at the area of investigation is generally to the north in the primary channels or ditches (see Plate 2). Most drainage in the tributary streams and ditches is to the west, except for Sites 2 and 3. At Site 2, drainage is to the south, then west to Canal No. 1. At Site 3, drainage is to the east to Canal No. 1. Topographic relief is only a few feet in the area of investigation and surface water flow rates are very low or stagnant. During periods of heavy rainfall, flow rates increase but remain relatively low.

C. Groundwater

1. Surficial Aquifer

Unconfined groundwater conditions were observed in the upper water-bearing unit at NCBC Gulfport. Groundwater elevations in the eighteen groundwater monitoring wells, measured on March 30, 1987, ranged from 18.20 to 25.25 feet NGVD (see Table 5). These measurements were taken within a three hour period, thereby minimizing influences to the groundwater surface that might be caused by tidal changes, barometric pressure changes and/or daily precipitation. Groundwater levels observed in ten of the eighteen wells were above the screened interval for the respective wells. The groundwater levels observed were considered to be above normal, most likely due to heavy precipitation for several weeks prior to measurement. A groundwater surface map for the surficial aquifer was developed for the

March 30, 1987 data (see Plate 3). In general, shallow groundwater flow in the western part of NCBC Gulfport is toward Canal No. 1 and then subsequently to the north. Apparently the surficial aquifer is closely interrelated with surface water bodies at NCBC Gulfport.

At this time, no published data were available on groundwater elevations or water quality of the surficial aquifer in the Gulfport area. Consequently, we were unable to compare the data obtained during our field investigations with any published literature. However, the United States Geological Survey (USGS) is completing a reconnaissance study of shallow groundwater in the Gulf Coastal Plain of Mississippi as part of the USGS Toxic Waste-Groundwater Contamination Program. The results will be published in 1988 in Water Resources - Investigation Report 86-4325, entitled "A Reconnaissance Study of Related Land Use and Groundwater Quality in the Gulf Coastal Plain of Louisiana and Mississippi."

2. Citronelle Formation

Confined groundwater conditions generally exist in the Citronelle Formation near NCBC Gulfport. This aquifer consists of mostly quartz sand, chert gravel, and lenses and layers of clay. Water quality in the Citronelle aquifer is described as generally good with isolated areas of saltwater intrusion (Shows, 1970).

Brown (1944) indicated that the Citronelle Formation was not encountered in Well Nos. 1 through 3 at NCBC Gulfport. Consequently no potable or production wells at NCBC Gulfport are presumed completed in the Citronelle Formation.

3. Miocene Aquifer

Confined groundwater conditions exist in the Miocene aquifer system beneath NCBC Gulfport. This aquifer consists of thick beds of gravel or sand with clay layers separating the beds. Water quality in the Miocene aquifer system is described as generally good with excessive iron in places (Shows, 1970).

Brown (1944) indicated that Well Nos. 1 through 3 at NCBC Gulfport were completed in the Graham Ferry and Pascagoula Formations. A total of seven wells, five potable (i.e., water supply) and two production (i.e., construction and irrigation), at NCBC Gulfport are probably completed in the Miocene aquifer system. The five potable wells [Well Nos. 1 (Bldg. 181), 2 (Bldg. 182), 3 (Bldg. 183), 4 (Bldg. 416), and 5 (Bldg. 417)] are located in the central and northeastern sections of NCBC Gulfport, with the exception of Well No. 3 which is located adjacent to Site 1 (see Plate 2). The two production wells are located in the western section of NCBC Gulfport (see Plate 2). One is located in the vicinity of the asphalt plant south of Site 4 and the other is located west of the pond used to irrigate the golf course, in the far northwest corner of NCBC Gulfport.

Water samples were collected from each of the five potable wells by HLA personnel on March 27, 1987. Groundwater depths measured before sampling ranged from 40 to 82 feet below the well head. Groundwater level measurements were difficult to obtain due to accumulation of phase separated hydrocarbon, apparently lubricating oil from the pumping equipment, on the groundwater surface in each well. Measurements were made using a water level indicator, or using an airline installed in the well, where available. Groundwater levels are considered relatively inaccurate due to hydrocarbon on the water surface in the well bore.

After groundwater levels were measured, the wells were pumped at normal production rates ranging from about 450 to 850 gallons per minute (gpm) for about 15 minutes to remove standing water from the well bore. During pumping, the field temperature, pH, and specific conductance were measured to ensure collection of consistent water samples. No hydrocarbon was observed in the water samples collected at each potable well.

The instruments were rinsed with deionized water prior to each test. Groundwater samples were collected in clean sample containers from a spigot at each well head. The containers were sealed with teflon-lined lids, labeled, and placed in chilled containers for

shipment to the analytical laboratory. No decontamination procedures were required for sampling equipment, since all samples were collected directly into laboratory containers.

No samples were collected from either of the two production wells. Base personnel reported that each well had been out of service for several years. No operable pumping equipment existed in either well.

Results of the chemical analyses performed on the ground-water samples from the potable wells are summarized in Table 6. The analytical results (pH, specific conductance and metals) are in general agreement with the Miocene aquifer groundwater quality data characterized by Shows (1970). Measurements of pH for the potable wells ranged from 8.00 to 9.03. Specific conductance ranged from 190 umhos to 500 umhos.

Toluene was the only volatile organic detected; however, it was present in all five wells at concentrations (6-ll ppb) only slightly above the detection limit. Phenol was the only acid extractable organic detected. It was detected only in Well No. 1, at a low level (12 ppb). The presence of toluene and phenol at very low concentrations may be attributed to the presence of phase separated hydrocarbon, presumably lubricating oil or solvents used for maintenance of

the well pumping equipment. Bis (2-Ethylhexyl) phthalate was the only detectable base-neutral extractable organic detected. It was detected in Well No. 1 and Well No. 3 at low concentrations (24 and 277 ppb) and is usually associated with the use of PVC piping. The only metal detected was chromium, found in Well No. 5 at a very low concentration (9.0 ppb).

Results of the laboratory analyses indicate no significant chemical contamination of the Activity potable wells. No extensive remedial action is indicated or recommended at this time; however, the source of the toluene detected in all samples should be identified. Resampling of all potable wells is recommended for confirmation of reported results and to eliminate the possibility of sampling artifacts. Sampling and chemical analysis of the phase separated hydrocarbon observed in each well could verify the contaminant source.

The phase separated hydrocarbon observed in each well should be removed from the groundwater surface and its source should be identified. If the pumping equipment itself or improper maintenance of the pumping equipment is identified as the source of either the phase separated hydrocarbon and/or the toluene, NCBC Gulfport should either modify or replace the existing equipment or maintenance procedures. In the interim, care should be taken, in the normal operation of the potable wells, to prevent excessive drawdown in the potable wells and possible pumpage of hydrocarbon by the well pumps.

VII SITE ANALYSES

A. Site 1, Disaster Recovery Disposal Area

The following subsections present the results of the analysis of data collected during field and laboratory investigations at Site 1 at NCBC Gulfport. All field methodology, geophysical data, borehole/groundwater monitoring well data and chemical analyses and QA/QC results are presented in Appendices A through E.

1. Background Information

Site 1 is currently used as a disaster recovery training area. From 1942 to 1948, before use as a training area, chemical wastes were disposed at this site primarily by trench burial of containerized materials, reportedly 55-gallon drums. The principal wastes disposed include paints, oils, solvents, paint strippers and cleaning compounds (Envirodyne, 1985). Excavation in this area in 1984 revealed several drums with xylene, toluene, and 1,2 dichloroethane (DCE).

2. Site Reconnaissance

The majority of Site 1 is covered by trees and other vegetative growth. A large building with classrooms and offices is located in the northeast corner of the site. Several smaller buildings are located in the central part of the site. These buildings are interconnected with narrow asphalt streets. Most of the buildings are supplied with electricity and water. The locations of major features at Site 1 are shown on Plate 4.

Site 1 is presently used for training activities which occasionally involve the use of personal protective equipment as used in "hazardous" environments. Simulated hazardous environments are created in the training buildings by Navy personnel during training activities. Navy personnel stated that the chemicals they used to create these environments are environmentally safe and pose no threat to health and safety.

Surface water flow in the drainage ditches on site (see Plate 4) was observed before and after periods of heavy rainfall. Surface water at Site 1 flows from the site to the west via interconnected drainage ditches, adjacent to the streets and in three shallow water bodies ("catfish" ponds) located at the north end of the site. The flow rate in the water courses is usually low or the water is nearly stagnant except following periods of heavy rainfall.

Groundwater monitoring wells GPT-1-1 and GPT-1-2 were located south of the treeline and north of an underground waterline. Groundwater monitoring well GPT-1-3 was located north of the treeline and south of the southernmost "catfish" pond. Sediment and surface

water sampling locations were selected in the north and south "catfish" ponds, in an internal drainage ditch and in the drainage ditch along Colby Avenue (see Plate 4).

3. Surface Geophysical Survey

The grid (50-foot by 50-foot) established in the geophysical survey at Site 1, extended 1,150 feet east/west (23 lines) and up to 550 feet (11 stations) north of the baseline (see Plate 5). All geophysical data obtained during the survey at Site 1 are included in Appendix B.

The magnetometer data is relatively smooth throughout the site. No major concentration of magnetic anomalies was observed, although sporadic anomalies are probably related to present cultural features such as buildings, fire hydrants, and parked vehicles.

The interpretation of the VLF data indicates that the general landfill area (defined by VLF measurements above background) covers the western two-thirds of the site (see Plate 4). The approximate boundaries lie between Lines 0 and 1 on the west, Stations 50 and 100 on the south and extend eastward generally between Lines 15 and 16. No northern boundary is evident. The area lying between Lines 15 and 16, and extending eastward to Lines 20 and 21, is where the VLF data drops below background. Review of 1951 aerial photographs indicates a mound of soil located there, possibly from excavations. This

area is believed to be part of Site 1, but was probably used for different purposes than the area to the west. Elevated VLF values in the northeast corner of the survey grid and along Station 250 east of Line 13, are considered the result of cultural features.

The lack of strong magnetic anomalies could be the result of the age of the site and/or the relatively high groundwater surface (observed at less than 2 feet below ground surface in the three groundwater monitoring wells installed). Metallic debris disposed at Site 1 has been in the ground up to 45 years, and in a wet (corrosive) environment it could have deteriorated sufficiently to have lost most of its magnetic properties.

The 1951 aerial photographs show that the north boundary of the landfill was located in an area now occupied by the southernmost "catfish" pond, explaining why no boundary was found in the VLF data.

4. Site Specific Geology

Strata encountered during drilling at Site 1 were unconsolidated sediments composed of sands, clays, clayey sands, and silty sands. A few inches of topsoil occur over most of the site, overlying a sand with varying amounts of clay and silt. In the southeast portion a sandy clay extends from the surface to 4 feet where it grades into a clayey sand. The sand unit beneath Site 1 extends to depths ranging from 26 feet to 29 feet. This unit represents the uppermost

water-bearing strata. Underlying this sand unit is a soft, sandy fat clay. All borings were terminated within two feet after encountering this clay unit. Detailed descriptions of the subsurface materials encountered at Site 1 are included on the boring/groundwater monitoring well logs in Appendix C.

5. Site Specific Hydrogeology

Unconfined groundwater conditions exist in the surficial aquifer encountered at Site 1. Groundwater elevations ranged from 23.96 to 25.23 feet NGVD on March 30, 1987 (see Table 5). Groundwater levels observed were above the screened interval for the respective monitoring wells.

Analysis of the water level data listed in Table 5 and illustrated on Plate 3 indicates that the groundwater surface is highest in the southeast corner of Site 1. The hydraulic gradient across the site generally slopes to the northwest (see Plate 4). The estimated direction of groundwater flow in the surficial aquifer indicates that wells GPT-1-1 and GPT-1-2 are upgradient rather than downgradient of Site 1 as originally presumed.

6. Sediment and Water Sampling, and Analytical Results

Sediment and surface water samples and groundwater samples were collected on March 28 and March 29, 1987, respectively. Sediment (SD1-1) and surface water (SW1-1) samples were collected from the

drainage ditch paralleling Colby Avenue at the west end of Site 1. The samples were taken at or just north (downstream) of the intersection with the main ditch draining Site 1. A colored sheen was observed on the water surface in the southern, west-flowing ditch during field activities. Navy personnel reported that this was a common occurrence in this ditch; therefore, a sediment sample (SD1-2) was collected near Building 139. A surface water sample (SW1-2) was collected from the intersecting north-south ditch west of Building 139 because the surface water was too shallow to be sampled in the southern ditch. The sample was collected within two feet of the southern ditch. Composite sediment and surface water samples (SD1-3 and SW1-3, and SD1-4 and SW1-4) were collected from the south and north catfish ponds, respectively. All groundwater monitoring wells were sampled consecutively. Well GPT-1-3 was sampled before GPT-1-1 and GTP-1-2 were since it was presumed to be upgradient of the site and therefore least likely to be contaminated.

The results of the chemical analyses of the sediment, surface water and groundwater samples collected from Site 1 are summarized in Table 7. Results of the chemical analyses for decontamination water, previously discussed in Section IV, are also summarized in Table 7, for comparison. Complete chemical analyses results for Site 1 are presented in Appendix D.

The results of each sample set (sediment, surface water and groundwater) were found to be generally consistent. Each sample set is comparable within itself and to other similar site samples. Generally, no volatile acid extractable or base-neutral extractable organic chemicals were detected in groundwater samples at concentrations greater than detection limits. The groundwater samples indicated minor concentrations of chromium and lead concentrations above detection limits. However, with the exception of one groundwater sample (GPT-1-2) that exhibited elevated chromium content (392 ug/1), the results are comparable to other similar site samples and are considered background levels for these inorganic constituents in the general site area.

7. Summary and Recommendations

Results of the field investigations and laboratory analyses indicate no significant chemical contamination at Site 1. No remedial action is indicated or recommended at Site 1 at this time. Although no significant contamination is indicated, resampling and analyses of all groundwater monitoring wells at Site 1 is recommended to verify the slightly elevated metal concentrations observed in groundwater from well GPT-1-2. This resampling should be considered only a continuation of the current Verification Phase of the Confirmation Study.

Results of the field investigation indicate only one monitoring well (GPT-1-3) is apparently downgradient of Site 1; therefore, the addition of one or more downgradient groundwater monitoring wells is recommended.

Since no significant contamination has been detected, all materials generated during field investigations at Site 1, including drill cuttings, and development, sampling and decontamination wastewater can be disposed as nonhazardous waste. NCBC Gulfport should follow their normal waste disposal procedures in handling these materials.

In the event contamination exists or occurs in the future in the surficial aquifer, the underlying clay layer beneath the surficial aquifer at Site 1 could prevent any downward movement of groundwater and minimize possible contamination of the lower aquifers.

B. Sites 2 and 7, World War II Landfill & Rubble Disposal Area

The following subsections present the results of the analysis of data collected during field and laboratory investigations at Sites 2 and 7 at NCBC Gulfport. All field methodology, geophysical data, boring/groundwater monitoring well data and chemical analyses and QA/QC results are presented in Appendices A through E.

During site reconnaissance at Sites 2 and 7, HLA observed that Site 7 covers a larger area than originally estimated in the IAS and actually intersects Site 2. After consulting with SODIV, field methodology and procedures were adjusted to combine Sites 2 and 7 into one large site rather than treat them as two smaller separate sites.

1. Background Information

From 1948 to 1966, chemical wastes were disposed at Site 2 by burning and burial. The principal wastes disposed include ash from combustible solid waste and noncombustible solid waste and liquid wastes (paints, paint thinners, solvents, oils and fuels) (Envirodyne, 1985). Combustion by-products were also disposed at Site 2.

Site 7 is currently used for rubble disposal and has been in operation since 1978. Disposal of chemical wastes have not been reported at this site.

2. Site Reconnaissance

Site 2 is covered by dense forest and low underbrush. The northern part of Site 2 contains a number of wet areas with standing water due to poor surface drainage conditions. Current activities at Site 2 are limited to grass mowing along the south and west boundaries and a controlled vegetation burn-off reportedly performed once every three years.

Site 7 has little vegetation. Past and present dumping activities have covered the site with rubble and debris. No evidence of chemical waste disposal was observed at Site 7 during site reconnaissance.

Surface water flow in the drainage ditches bordering these sites (see Plate 6) was observed before and after periods of heavy rainfall. Surface water flow at Sites 2 and 7 is generally limited, often resulting in localized, swampy conditions. The sites are bordered on all sides by drainage ditches, as follows: (1) on the east end by an intermittent stream flowing to the south; (2) on the west end by a drainage ditch flowing south; (3) along the south side by a drainage ditch flowing west; and (4) along the north side by a drainage ditch flowing west. The flow rates in the water courses are usually low or the water is nearly stagnant except following periods of heavy rainfall.

Groundwater monitoring wells GPT-2-1 and GPT-2-2 were located south of the treeline and north of Eighth street. Groundwater monitoring well GPT-2-3 was located north of Site 7 and south of the drainage ditch paralleling Eleventh Street. Sediment (SD2-1) and surface water (SW2-1) sampling locations were selected in the drainage ditch south of Eighth Street (see Plate 6).

3. Surface Geophysical Surveys

a. Site 2

The grid (50-foot by 50-foot) established for the geo-physical survey of Site 2 extended 600 feet east/west (12 lines) and up to 800 feet north (16 stations) of the baseline (see Plate 7). All geophysical data obtained during the survey at Site 2 are included in Appendix B.

The magnetometer data indicates an anomalous area occupying almost a third of the western one-half of Site 2 (see Plate 7). Other areas of magnetic anomalies occur in the north central portion of the site.

The general pattern of the VLF data shows measurements of almost 40 percent above background at the center of the site with values dropping toward background to both the east and west. The VLF data indicates that the western boundary of the site is close to Colby Avenue, north of Station 400. The area delineated by the VLF data trends southeast and is 150 to 200 feet wide. This encompasses much of the area where the magnetometer indicated the presence of metal. Two areas on the eastern side of the survey, show elevated VLF measurements, but these measurements were probably influenced by the creek.

b. Site 7

The grid (100 by 100 foot) established for the geophysical survey at Site 7 extended 400 feet east/west (4 lines) and 500 feet (5 stations) north of the baseline (see Plate 8). All geophysical data obtained during the survey at Site 7 are included in Appendix B.

Three areas of magnetic anomalies were located, one at Station 0 on Lines 2 and 3, one at Station 200 on Line 0, and one at Station 300 on Line 3. At these locations, metal debris could be seen at the surface. The limits of the landfill on the west and south sides of Site 7 were obvious from the 6- to 8-foot high wall of rubble encroaching on the woods (Site 2).

The VLF data indicates that the northern and eastern boundaries of the site (defined by values 100 percent or greater of background) approach the drainage ditches on their respective sides (see Plate 8).

4. Site Specific Geology

Strata encountered during drilling at Sites 2 and 7 were unconsolidated sediments composed of clays, silts, sands, and silty sands. A sand unit with varying amounts of silt exists at the ground surface or underlying a few inches of topsoil. This sand layer extends to depths ranging from 13 feet to 30 feet. The unit represents the

uppermost water-bearing strata. Underlying this sand unit is a soft, sandy, fat clay. All borings were terminated within two feet after encountering this clay unit. Detailed descriptions of the subsurface materials encountered at Sites 2 and 7 are included on the boring/groundwater monitoring well logs in Appendix C.

5. Site Specific Hydrogeology

Unconfined conditions exist in the surficial aquifer encountered at Sites 2 and 7. Groundwater elevations ranged from 19.91 to 20.93 feet NGVD on March 30, 1987 (see Table 5). Groundwater levels observed were above the screened interval for the respective monitoring wells.

Analysis of the water level data listed in Table 5 and illustrated on Plate 3 indicates that the groundwater surface is highest in the north end of Sites 2 and 7. The hydraulic gradient across the sites generally slopes to the east (see Plate 6). The estimated direction of groundwater flow in the surficial aquifer indicates that wells GPT-2-1 and GPT-2-2 are upgradient rather than downgradient of Site 2 as originally presumed.

6. Sediment and Water Sampling, and Analytical Results

Sediment and surface water samples, and groundwater samples were collected on March 26, and March 28, 1987, respectively. The sediment (SD2-1) and surface water (SW2-1) samples were taken from the drainage ditch along the south end of the site about 50 feet east of Colby

Street. All groundwater monitoring wells were sampled consecutively. Well GPT-2-3 was sampled before GPT-2-1 and GPT-2-2, since it was presumed to be upgradient of the site and therefore least likely to be contaminated.

The results of the chemical analyses of the sediment, surface water and groundwater samples taken from Sites 2 and 7 (see Plate 6) are summarized in Table 8. Results of the chemical analyses for decontamination water, previously discussed in Section IV, are also summarized in Table 8, for comparison. Complete chemical analyses results for Sites 2 and 7 are presented in Appendix D.

As was the case for Site 1, the analyses results were found to be generally consistent. Each sample is comparable within itself and all constituents are in the range of background levels for the general site area. Very low levels of volatile chlorinated organic contaminants (1, 2-trans-dichloroethlylene, trichloroethylene and, toluene) were detected in one groundwater monitoring well (GPT-2-3). Historical records for this landfill indicates that solvent wastes were disposed at Site 2 (Envirodyne, 1985).

7. Summary and Recommendations

Results of the field investigations and laboratory analyses indicate no significant chemical contamination of Sites 2 or 7. No remedial action is indicated or recommended at Sites 2 or 7 at this

time. Although no significant contamination is indicated resampling and analyses of all groundwater monitoring wells at Sites 2 and 7 is recommended in order to verify the elevated concentrations observed in well GPT-2-3 and to evaluate the significance of the chlorinated organic contaminants that may be present. This resampling should be considered only a continuation of the current Verification Phase of the Confirmation Study.

Results of the field investigation indicate that no existing groundwater monitoring wells are apparently downgradient of Sites 2 and 7; therefore, the addition of one or more downgradient groundwater monitoring wells is recommended.

Since no significant contamination has been detected, all materials generated during field investigations at Sites 2 and 7, including drill cuttings, and development, sampling and decontamination wastewater can be disposed as nonhazardous waste. NCBC Gulfport should follow their normal waste disposal procedures in handling these materials.

In the event contamination exists or occurs in the future in the surficial aquifer, the underlying clay layer beneath the surficial aquifer at Sites 2 and 7 should prevent any downward movement of groundwater and minimize possible contamination of the lower aquifers.

C. Site 3, Northwest Landfill/Burning Pits

The following subsections present the results of the analysis of data collected during field and laboratory investigations at Site 3 at NCBC Gulfport. All field methodology, geophysical data, borehole/groundwater monitoring well data and chemical analysis and QA/QC results, and data are presented in Appendix A through E.

1. <u>Background Information</u>

Site 3 is currently a training area for Navy Reserve personnel. From 1948 to 1966, prior to use as a training area, chemical wastes were disposed at this site by burning and burial. The principal wastes disposed included substantial solid wastes and liquid wastes (fuels, oils, solvents, paints, and paint thinners) (Envirodyne, 1985). Combustion by-products were also disposed at Site 3.

2. <u>Site Reconnaissance</u>

Due to on-going training activities, most of Site 3 has little vegetation. However, the site is bordered by trees and other vegetative growth. Activities at this site include the building and dismantling of tents, towers, and other small structures. According to Navy personnel, these activities do not include the use of any hazardous substances.

No surface water flow or runoff (see Plate 9) was observed on the site before or after periods of heavy rainfall. Most precipitation rapidly infiltrated into the soils or ponded on the surface. The southern end of the site drains to the east via a shallow drainage ditch along the north side of Eighth Street and a deeper ditch along the south side of Eighth Street. The east side of the site is bordered by Canal No. 1 flowing to the north. Surface water flow rates are usually very low or the water is nearly stagnant in the deeper ditches except after heavy rainfall. The shallow ditch apparently contains water only following heavy rainfall. Consequently, surface water and sediment sampling locations were moved to the deeper drainage ditch south of Eighth Street.

Groundwater monitoring wells GPT-3-1 and GPT-3-2 were located south of Eighth Street in a wooded area. Groundwater monitoring well GPT-3-3 was located between the east edge of the site and Canal No. 1. Sediment (SD3-1) and surface water (SW3-1) sampling locations were selected in the drainage ditch adjacent to Eighth Street and wells GPT-3-1 and GPT-3-2 (see Plate 9).

3. <u>Surface Geophysical Surveys</u>

The grid (50-foot by 50-foot) established for the geophysical survey of Site 3 extended 1,250 feet east/west (13 lines) and up to 350 feet (7 stations) north of the baseline (see Plate 10). All geophysical data obtained during the survey at Site 3 are included in Appendix B.

The magnetometer data indicates a large anomalous area in the center of the site (see Plate 10). This area covers about 500 feet east/west by 200 feet north/south.

The VLF data for Site 3 suggests that the eastern boundary is approximately 100 feet west of the canal and the southern boundary is in the vicinity of the road. Based on the VLF data, delineation of parts of the northern and western boundaries was inconclusive. The grid for the VLF survey extended far beyond (up to 200 feet) the suspected limits of Site 3; however, the pattern of the VLF data did not change, suggesting that the observed pattern is a result of localized natural conditions. In addition, a review of historical aerial photographs indicates that the site has been used for numerous activities (both before and after its use as a landfill), probably further disrupting any distinct boundary between landfill materials and natural soil.

4. Site Specific Geology

Strata encountered during drilling at Site 3 were unconsolidated sediments composed of clays, sands, and silty sands. A sand unit exists at the ground surface over most of the site except in the southeast portion where it underlies an approximate 6-foot thick sandy, lean clay layer. This sand unit varies from a clean, poorly graded sand to a silty sand. The sand layer represents the uppermost waterbearing strata. At depths ranging from 15.4 feet to 27.5 feet, is an underlying soft, fat clay with varying amounts of sand. Boring GPT-3-1 was extended 13.6 feet into the underlying clay in an attempt to estimate the thickness of the clay. The other borings were terminated within two feet after encountering the clay unit. Detailed descriptions of the subsurface materials encountered at Site 3 are included on the boring/monitoring well logs in Appendix C.

5. Site Specific Hydrogeology

Unconfined groundwater conditions exist in the surficial aquifer encountered at Site 3. Groundwater elevations ranged from 18.20 to 21.22 feet NGVD on March 30, 1987 (see Table 5). The groundwater level observed in well GPT-3-1 was above the screened interval for the monitoring well.

Analysis of the water level data listed in Table 5 and illustrated on Plate 3 indicates that the groundwater surface is highest in the southwest corner of Site 3. The hydraulic gradient

across the site generally slopes to the northeast (see Plate 9). The estimated direction of groundwater flow in the surficial aquifer indicates that wells GPT-3-1 and GPT-3-2 are upgradient rather than downgradient of Site 3 as originally presumed.

6. Sediment and Water Sampling, and Analytical Results

Sediment and surface water samples, and groundwater samples were initially collected on March 27, and March 28, 1987, respectively. Some of the sediment and surface water sample containers were broken during shipment. The sediment and surface water locations were resampled on April 7, 1987; however, the sediment sample container was broken again during shipment. The sediment location was resampled for the second time on May 4, 1987. The sediment (SD3-1) and surface water (SW3-1) samples were collected from the southern drainage ditch approximately 350 feet west of Canal No. 1. All groundwater monitoring wells were sampled consecutively. Well GPT-3-3 was sampled before GPT-3-1 and GPT-3-2, as it was presumed to be upgradient of the site and therefore least likely to be contaminated.

Results of the chemical analyses of the sediment, surface water and groundwater samples from Site 3 (see Plate 9) are summarized in Table 9. Results of the chemical analyses for decontamination water, previously discussed in Section IV, are also summarized in Table 9 for comparison. Complete chemical analysis results for Site 3 are presented in Appendix D.

The analyses results were found to be generally consistent. Each sample is comparable within itself and all constituents are in the range of background levels for the general site area. No volatile organic, acid-extractable or base-neutral extractable contaminants were found at greater than their analytical detection limit.

7. Summary and Recommendations

Results of the field investigations and laboratory analyses indicate no significant chemical contamination at Site 3. No remedial action is indicated or recommended at Site 3 at this time.

Results of the field investigation indicate that only one groundwater monitoring well (GPT-3-3) is apparently downgradient of Site 3; therefore, the addition of one or more downgradient groundwater monitoring wells is recommended.

Since no significant contamination has been detected, all materials generated during field investigations at Site 3 including drill cuttings, and development, sampling and decontamination wastewater can be disposed as nonhazardous waste. NCBC Gulfport should follow their normal waste disposal procedures in handling these materials.

In the event contamination exists or occurs in the future in the surficial aquifer, the underlying clay layer beneath the surficial aquifer at Site 3 could prevent any downward movement of groundwater and minimize possible contamination of the lower aquifers.

D. Site 4, Golf Course Landfill

The following subsections present the results of the analysis of data collected during field and laboratory investigations at Site 4 at NCBC Gulfport. All field methodology, geophysical data, borehole/groundwater monitoring well data and chemical analysis and QA/QC results, are presented in Appendices A through E.

1. Background Information

Site 4 is located on the base golf course and driving range. From 1966 to 1972, prior to construction of the golf course, chemical wastes were disposed at this site by burning and burial. Some containerized chemical wastes were also buried. The principal wastes disposed included solid wastes and liquid wastes [fuel, oils, solvents (toluene, xylene, methyl ethyl ketone [MEK]), paints, and paint thinners] (Envirodyne, 1985). Combustion by-products were also disposed at Site 4.

2. Site Reconnaissance

Site 4 is covered with several feet of fill material, reportedly containing debris from damaged buildings and structures, and well-groomed turf. Currently, this site includes the practice putting green, the No. 9 green and the No. 1 tee. Limited quantities of herbicides, pesticides and fertilizers are assumed to be in use at this site.

Surface water flow in the drainage ditches bordering the site (see Plate 11) was observed before and after periods of heavy rainfall. No water was observed in the drainage ditch north of Seventh Street, consequently proposed surface water and sediment sampling locations were omitted from this area. In the vicinity of Site 4, Canal No. 1 is overgrown with aquatic vegetation and densely populated with turtles. The majority of precipitation on Site 4 runs off directly or indirectly into Canal No. 1. A minor amount infiltrates the ground surface. Flow rates in Canal No. 1 are usually very low except following heavy rainfall.

Groundwater monitoring wells GPT-4-1 and GPT-4-2 were located between the south boundary of the site and Seventh Street near a main waterline. Well GPT-4-3 was located near the practice green area on the north side of the site. Some difficulty was encountered in locating GPT-4-3 due to the presence of buried metal in this area

of the site. Sediment (SD4-1) and surface water (SW4-1) sampling locations were selected in Canal No. 1 near the wooden bridge in a relatively clear and flowing reach of the canal (see Plate 11).

3. <u>Surface Geophysical Surveys</u>

The grid (50-foot by 50-foot) established for the geophysical survey of Site 4 was generally triangular in shape, extending 600 feet (12 lines) along the baseline and extending up to a maximum of 650 feet (13 stations) north on Line 11 (see Plate 12). All geophysical data obtained during the survey at Site 4 are included in Appendix B.

The magnetometer data indicates that a considerable amount of the survey area is underlain with unknown metallic material (see Plate 12). Some of this metallic material was probably buried during previous landfilling operations. Some metallic material is also probably debris from Hurricane Camille (August 17, 1969), which was used to help increase the grade at the site.

The VLF data indicates boundaries, based on values 100 percent or greater of background. One hundred percent was selected due to the potentially high variability of background data, similar to the area of magnetic anomalies. In places, the presence of metal extends beyond the possible boundary set by the VLF data. This confusion arises as a result of the two different uses of the site

(subsurface and above grade filling). The area defined by the geophysical survey is much larger than previously thought; however, review of historical 1970 aerial photographs, indicates that the placement of debris in the Site 4 area had taken place as far north and east as the magnetometer and VLF data indicate.

4. <u>Site Specific Geology</u>

Strata encountered during drilling at Site 4 were unconsolidated sediments composed of clay, sand, silty sand, and fill material.

Most of Site 4 is covered with a few inches of topsoil and several feet of sand fill containing organic debris. At boring GPT-4-3, 11 feet of fill was encountered. At borings GPT-4-1 and GPT-4-2, only a few inches of topsoil or fill were encountered. The topsoil and fill overlie the surficial aquifer which is composed of sand containing varying amounts of silt. This sand unit ranges in depth from 19 feet to 26 feet. Underlying the sand layer is a soft sandy, fat clay. The borings were terminated within three feet after encountering the clay unit. Detailed descriptions of the subsurface materials encountered at Site 4 are included on the boring/groundwater monitoring well logs in Appendix C.

5. Site Specific Hydrogeology

Unconfined conditions exist in the surficial aquifer encountered at Site 4. Groundwater elevations ranged from 21.84 to 23.73 feet NGVD on March 30, 1987 (see Table 5). The groundwater

levels observed in wells GPT-4-1 and GPT-4-2 were above the screened interval for the respective monitoring wells.

Analysis of the water level data listed in Table 5 and shown on Plate 3 indicates that the groundwater surface is highest in the southeast corner of Site 4. The hydraulic gradient across the site generally slopes to the northwest (see Plate 11). The estimated direction of groundwater flow in the surficial aquifer indicates that wells GPT-4-1 and GPT-4-2 are upgradient rather than downgradient of Site 4, as originally presumed.

6. Sediment and Water Sampling, and Analytical Results

Sediment and surface water samples, and groundwater samples were collected on March 27, and March 29, 1987, respectively. The sediment (SD4-1) and surface water (SW4-1) samples were collected from Canal No. 1 beneath the bridge near the ninth green. All groundwater monitoring wells were sampled consecutively. Groundwater monitoring well GPT-4-3 was sampled before GP-4-1 and GPT-4-2, as it was presumed to be upgradient of the site and therefore least likely to be contaminated.

Results of the chemical analyses of the sediment, surface water and groundwater samples from Site 4 (see Plate 11) are summarized in Table 10. Results of the chemical analyses for decontamination water, previously discussed in Section IV, are also summarized in Table 10, for comparison. Complete chemical analysis results for Site 4 are presented in Appendix D.

The results of the sample series for Site 4 indicates contaminant concentrations are generally consistent with background levels and with the type of sample. Elevated TOC and COD concentrations were observed in the sediment sample (SD4-1) from Canal No. 1. These results are not unusual for highly eutrophic watercourses, such as that observed in the canal where the sample was taken.

7. Summary and Recommendations

Results of the field investigations and laboratory analyses indicate no significant chemical contamination at Site 4. No remedial action is indicated or recommended at Site 4.

Results of the field investigation indicate that only one groundwater monitoring well (GPT-4-3) is apparently downgradient of Site 4; therefore, the addition of one or more downgradient groundwater monitoring wells is recommended.

Since no significant contamination has been detected, all materials generated during field investigations at Site 4 including drill cuttings, and development, sampling and decontamination wastewater can be disposed as nonhazardous waste. NCBC Gulfport should follow their normal waste disposal procedures in handling these materials.

In the event contamination exists or occurs in the future in the surficial aquifer, the underlying clay layer beneath the surficial aquifer at Site 4 could prevent any downward movement of groundwater and minimize possible contamination of the lower aquifers.

E. Site 5, Heavy Equipment Training Area Landfill

The following subsections present the results of the analysis of data collected during field and laboratory investigations at Site 5 at NCBC Gulfport. All field methodology, geophysical data, borehole/groundwater monitoring well data and chemical analysis and QA/QC results, and data are presented in Appendices A through E.

1. Background Information

Site 5 is currently used a training area for operating heavy equipment. From 1972 to 1976, before its use as a training area, Site 5 was used as a landfill for the burial of containerized and noncontainerized chemical wastes. The principal wastes disposed included

liquid wastes [fuels, oils, solvents (methyl ethyl ketone [MEK], toluene, xylene), paints, and paint thinners], some solid wastes, and liquid dichlorodiphenyl-trichloroethane (DDT) (Envirodyne, 1985).

2. Site Reconnaissance

Due to ongoing training activities, most of Site 5 has little vegetation. However, the site is bordered by trees and other vegetative growth. Activities at this site include the periodic removal and replacement of soil with earth-moving equipment. According to Navy personnel, these activities do not generally involve the release of any hazardous substances to the environment, although there are occasional fuel leaks from the equipment fuel tanks.

Surface water flow in the drainage ditches bordering the site (see Plate 13) was observed before and after periods of heavy rainfall. Surface water movement (i.e., internal drainage) is limited over most of Site 5, creating scattered ponded areas and rapid infiltration into the soils. The site is bordered on the east by an intermittent stream flowing to the south and on the south and west by a drainage ditch flowing to the west then north. Flow rates are usually very low or the water is nearly stagnant except following periods of heavy rainfall.

Groundwater monitoring wells GPT-5-1 and GPT-5-2 were located along the southern edge of Site 5 north of the adjacent drainage ditch. Well GPT-5-3 was located between the perimeter road and the west edge of Site 5. Sediment (SD5-1) and surface water (SW5-1) sampling locations were selected in the drainage ditch south of the site between Wells GPT-5-1 and GPT-5-2 (see Plate 13).

3. Surface Geophysical Surveys

The grid (50-foot by 50-foot) established for the geophysical survey of Site 5 extended a maximum of 950 feet east/west (19 lines) and up to 850 feet (17 stations) north of the baseline (see Plate 14). All geophysical data obtained during the survey at Site 5 are included in Appendix B.

The magnetometer data indicates the presence of metallic material in the southern one-half of the site, in an area approximately 500 feet east/west and 650 feet north/south (see Plate 14).

The VLF data indicates the soils at Site 5 are relatively homogeneous. The very active nature of Site 5, with the soil being constantly moved and mixed by the trainees at the Grader/Scraper School, is most likely responsible for this condition. A number of small areas with VLF values above background are indicated throughout the site, but only one coincides with the area of magnetic anomalies and is probably a result of landfill operation. The areas on the

north side of the site may be the result of different types of material (gravel, clay etc.) brought in for training purposes. The VLF results for the southeast corner of the site are probably an artifact of the data processing.

4. Site Specific Geology

Strata encountered during drilling at Site 5 were unconsolidated sediments composed of clay, sand, clayey sand, and silty sand. A sand unit with varying amounts of clay and silt exists at Site 5 extending from the ground surface to depths ranging from 17.5 feet to 20.7 feet. This unit represents the uppermost water-bearing strata. Underlying the sand layer is a soft, fat clay. All borings were terminated within three feet after encountering the clay unit. Detailed descriptions of the subsurface materials encountered at Site 5 are included on the boring/groundwater monitoring well logs in Appendix C.

5. Site Specific Hydrogeology

Unconfined groundwater conditions exist in the surficial aquifer encountered at Site 5. Groundwater elevations ranged from 21.35 to 22.28 feet NGVD on March 30, 1987 (see Table 5).

Analysis of the water level data listed in Table 5 and illustrated on Plate 3 indicates that the groundwater surface is highest in the southeast corner of Site 5. The hydraulic gradient

across the site generally slopes to the west (see Plate 13). The estimated direction of groundwater flow in the surficial aquifer indicates that wells GPT-5-1 and GPT-5-2 are upgradient rather than downgradient of Site 5, as originally presumed.

6. Sediment and Water Sampling, and Analytical Results

Sediment and surface water samples, and groundwater samples were collected on March 27, and March 29, 1987, respectively. Some of the surface water sample containers were broken during shipment. The surface water location was resampled on April 7, 1987. The sediment (SD5-1) and surface water (SW5-1) samples were collected from the south drainage ditch about 200 feet east of the bridge on Perimeter Road. All groundwater monitoring wells were sampled consecutively. Well GPT-5-3 was sampled before GPT-5-1 and GPT-5-2 as it was presumed to be upgradient of the site and therefore least likely to be contaminated.

Results of the chemical analyses of the sediment, surface water and groundwater samples from Site 5 (see Plate 13) are summarized in Table 11. Results of the chemical analyses for decontamination water, previously discussed in Section IV, are also summarized in Table 11, for comparison. Complete chemical analysis results for Site 5 are presented in Appendix D.

The results of the sample series for Site 5 indicates contaminant concentrations are generally consistent with background levels and with the type of sample. Elevated TOC and COD concentrations were observed in the sediment sample (SD5-1) from the adjacent drainage ditch. These results are not unusual for highly eutrophic watercourses, such as that observed in the ditch where the sample was taken.

7. Summary and Recommendations

Results of the field investigations and laboratory analyses indicate no significant chemical contamination at Site 5. No remedial action is indicated or recommended at Site 5.

Results of the field investigation indicate that only one groundwater monitoring well (GPT-5-3) is apparently downgradient of Site 5; therefore, the addition of one or more downgradient groundwater monitoring wells is recommended.

Since no significant contamination has been detected, all materials generated during field investigations at Site 5 including drill cuttings, and development, sampling and decontamination wastewater can be disposed as nonhazardous waste. NCBC Gulfport should follow their normal waste disposal procedures in handling these materials.

In the event contamination exists or occurs in the future in the surficial aquifer, the underlying clay layer beneath the surficial aquifer at Site 5 could prevent any downward movement of groundwater and minimize possible contamination of the lower aquifers.

F. Site 6, Fire Fighting Training Area

The following subsections present the results of the analysis of data collected during field and laboratory investigations at Site 6 at NCBC Gulfport. All field methodology, geophysical data, borehole/groundwater monitoring well data and chemical analysis and QA/QC results are presented in Appendices A through E.

1. Background Information

Site 6 is currently a training area for electricians. From 1966 to 1975, prior to its current use, chemical wastes were disposed at Site 6 by burning in unlined earth pits during fire fighting training. The principal wastes disposed were free liquid wastes [fuels, oils, solvents (xylene,, Stoddard, toluene, [MEK]), paints and paint thinners] (Envirodyne, 1985). Also, combustion by-products were present.

2. Site Reconnaissance

Site 6 is mostly covered by regularly mowed grass. The absence of grass in some areas is probably due to site activities, rather than symptomatic of stressed vegetation. Activities at this

site include training personnel to construct and dismantle powerlines and transformers on electric utility poles. According to Navy personnel, these activities do not involve the use of any hazardous substances.

Surface runoff at Site 6 (see Plate 15) was observed before and after periods of heavy rainfall. Surface water movement (i.e., internal drainage) is limited over most of Site 6, creating scattered ponded areas. The site is bordered on the west side by a drainage ditch flowing to the north. Flow rates are usually very low or the water is nearly stagnant except following periods of heavy rainfall. Surface runoff generally flowed into the drainage ditch west of the site.

Groundwater monitoring wells GPT-6-1 and GPT-6-2 were located along the southern edge of the site, north of a proposed building site. Well GPT-6-3 was located between the western edge of the site and the downgradient drainage ditch. The sediment (SD6-1) sampling location was selected in the drainage ditch west of the site near well GPT-6-3. Soil (SL6-1 and SL6-2) sampling locations were selected presumably west of the abandoned burning pits (see Plate 15).

3. <u>Surface Geophysical Survey</u>

The grid (50-foot by 50-foot) established for the geophysical survey of Site 6 extended 150 feet east/west (3 lines) and 250 feet (5 stations) north of the baseline (see Plate 16). All geophysical data obtained during the survey at Site 6 are included in Appendix B.

Site 6 is not a former or present landfill, as are the other sites at NCBC Gulfport. The purpose of the geophysical survey at Site 6 was to identify buried metal in the vicinity of the former burning pits and to investigate the area around the former pits for soil conductivity patterns that may suggest possible subsurface contamination.

The magnetometer data is basically representative of existing structures; however, two anomalies, Line 1, Station 0 and Line 3, Station 100, were not directly related to buildings (see Plate 16). These two anomalies probably represent some type of metal in the subsurface but both anomalies are 50 to 100 feet from the estimated location of the former burning pits and are probably not related to the burning pit activity.

The VLF data indicates small areas, above background, to the north and south of the former pit locations. The changes observed in the VLF data probably represent the results of construction in the area over the last few years rather than any evidence of contamination.

4. Site Specific Geology

Strata encountered during drilling at Site 6 were unconsolidated sediments composed of clay, sand, clayey sand, and silty sand. A sand unit with varying amounts of clay and silt, exists at the ground surface or underlying a few inches of topsoil. The sand is the uppermost water-bearing strata and ranges in depth from 22 feet to 27.5 feet. Underlying this unit is a soft, fat clay. All borings were terminated within two feet after encountering the clay unit. Detailed descriptions of the subsurface materials encountered at Site 6 are included on the boring/groundwater monitoring well logs in Appendix C.

5. Site Specific Hydrogeology

Unconfined conditions exist in the surficial aquifer encountered at Site 6. Groundwater elevations ranged from 24.72 to 25.19 feet NGVD on March 30, 1987 (see Table 5). The groundwater level observed in well GPT-6-3 was above the screened interval for the monitoring well.

Analysis of the water level data listed in Table 5 and illustrated on Plate 3 indicates that the groundwater surface is highest in the southeast corner of Site 6. The hydraulic gradient across the site generally slopes to the west (see Plate 15).

6. Sediment, Soil and Water Sampling, and Analytical Results

Sediment and soil samples, and groundwater samples were collected on March 26, and March 29, 1987, respectively. Some of the groundwater (GPT-6-1) sample containers were broken during shipment. Monitoring well GPT-6-1 was resampled on April 7, 1987. The sediment sample (SD6-1) was collected from the west drainage ditch near groundwater monitoring well GPT-6-3. One soil sample (SL6-2) was collected about 20 feet west of Building 383, and one (SL6-1) was collected about 10 feet east of the storage building. All groundwater monitoring wells were sampled consecutively. Groundwater Monitoring Well GPT-6-3 was sampled before GPT-6-1 and GPT-6-2 because it was presumed to be upgradient of the site and therefore least likely to be contaminated.

Results of the chemical analyses of the sediment, soil and groundwater samples from Site 6 (see Plate 15) are summarized in Table 12. Results of the chemical analyses for decontamination water, previously discussed in Section IV, are also summarized in Table 12, for comparison. Complete chemical analysis results for Site 6 are presented in Appendix D.

The results of the sample series for Site 6 generally indicate contaminant concentrations are generally consistent with background levels and with the type of sample. Both soil samples had relatively high concentrations of TOC, COD and O&G, probably due to residues from chemicals burned in the pits during training exercises

at the site. Very low concentrations of 1,1- and 1,2-Dichloroethane were observed in the well GPT-6-3. No immediate explanation for the presence of these chemicals is available; however, it may also be due to residuals from the burning pits.

7. Summary and Recommendations

Results of the field investigations and laboratory analyses indicate no significant chemical contamination at Site 6. No remedial action is indicated or recommended at this time at Site 6. Although no significant contamination is indicated at Site 6, resampling and analyses of all groundwater monitoring wells at Site 6 is recommended to verify the elevated dichloroethane concentrations observed in groundwater from well GPT-6-3. This resampling should be considered only a continuation of the current Verification Phase of the Confirmation Study.

Since no significant contamination has been detected, all materials generated during field investigations at Site 6 including drill cuttings, and development, sampling and decontamination wastewater can be disposed as nonhazardous waste. NCBC Gulfport should follow their normal waste disposal procedures in handling these materials.

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In the event contamination exists or occurs in the future in the surficial aquifer, the underlying clay layer beneath the surficial aquifer at Site 6 could prevent any downward movement of groundwater and minimize possible contamination of the lower aquifers.

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DISTRIBUTION

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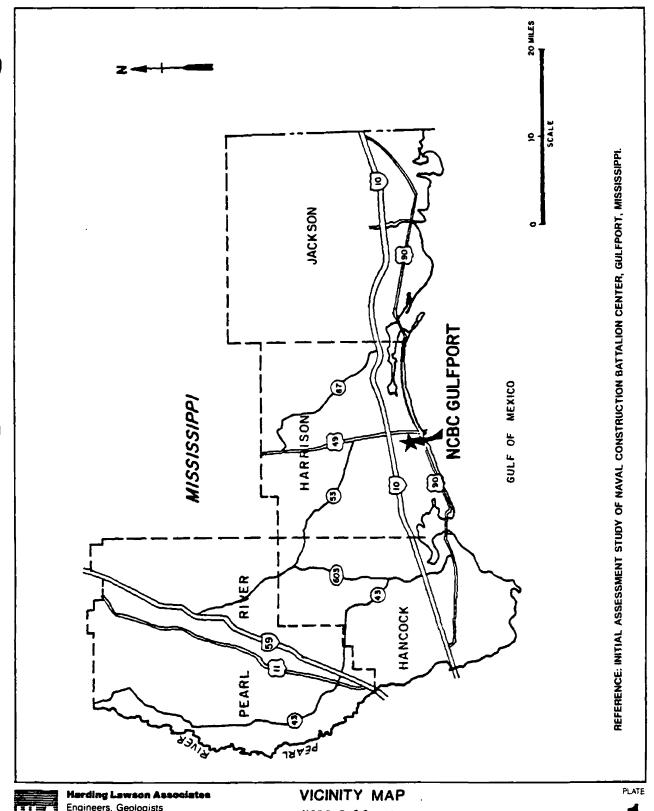
Gulfport, Mississippi 39501

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Stephen D. Phillips, C.P.G Associate Hydrogeologist ILLUSTRATIONS





Engineers, Geologists & Geophysicists

NCBC Gulfport Gulfport, Mississippi

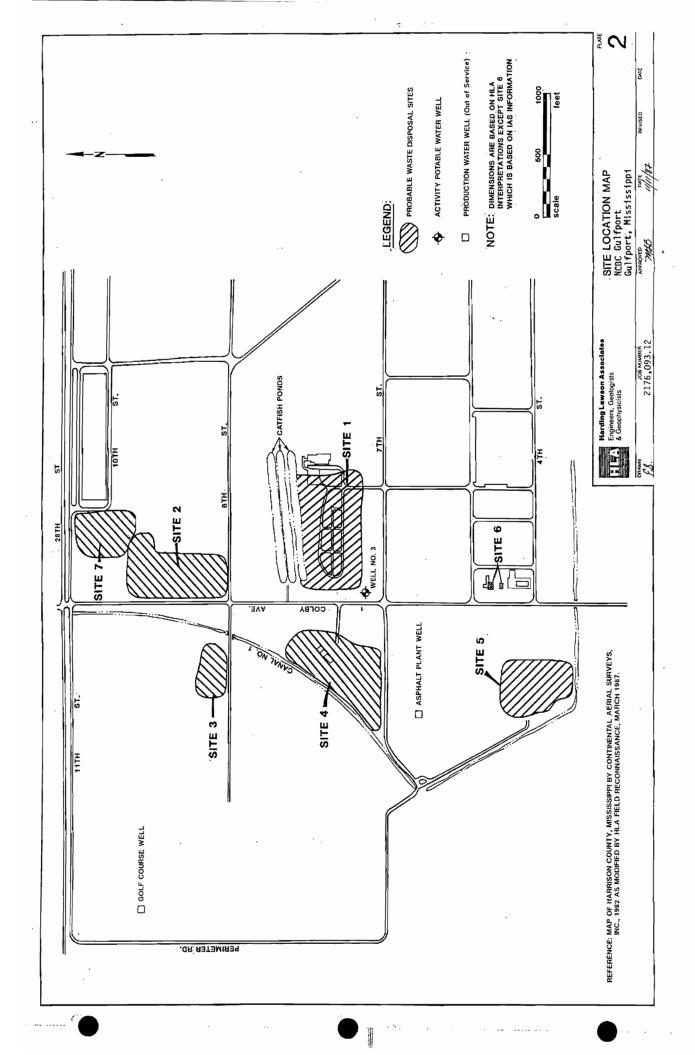
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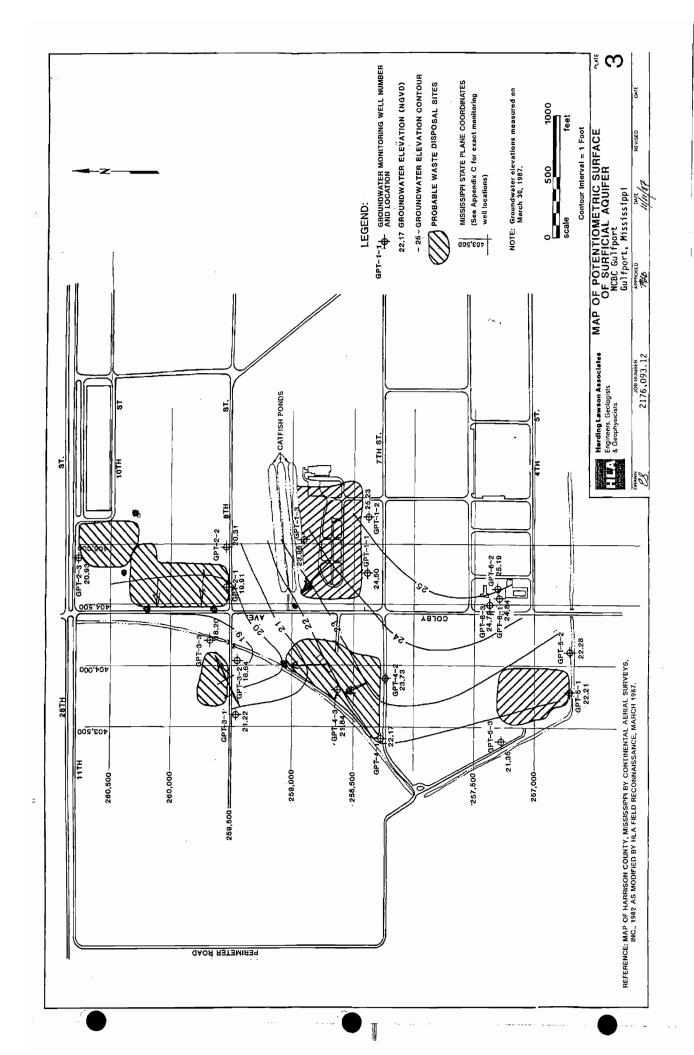
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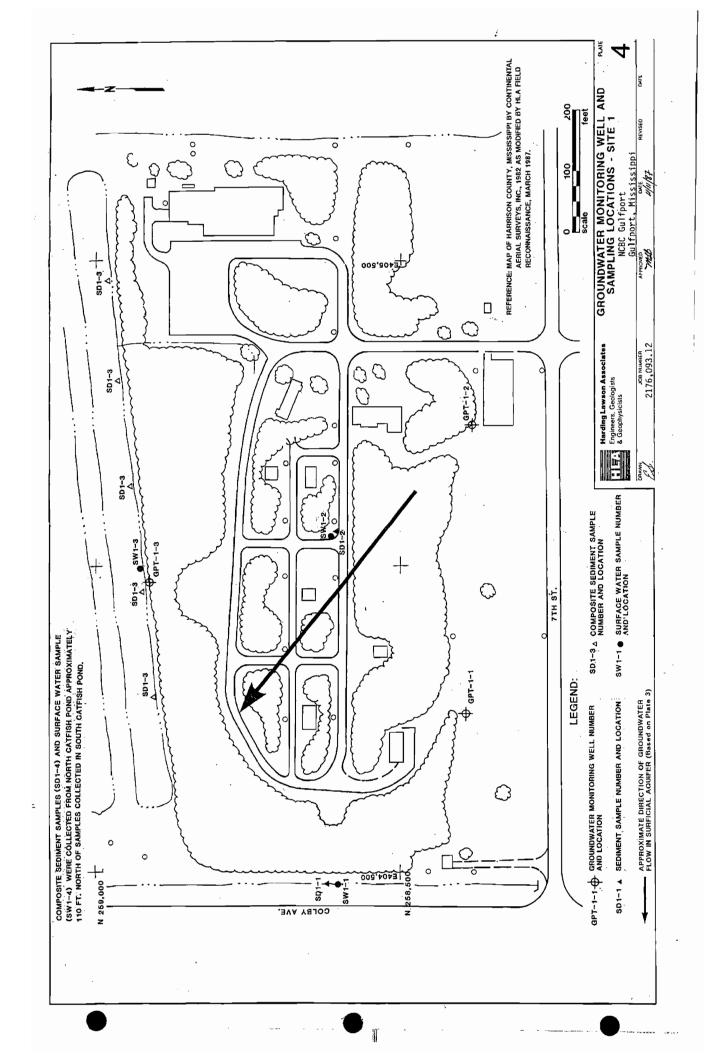
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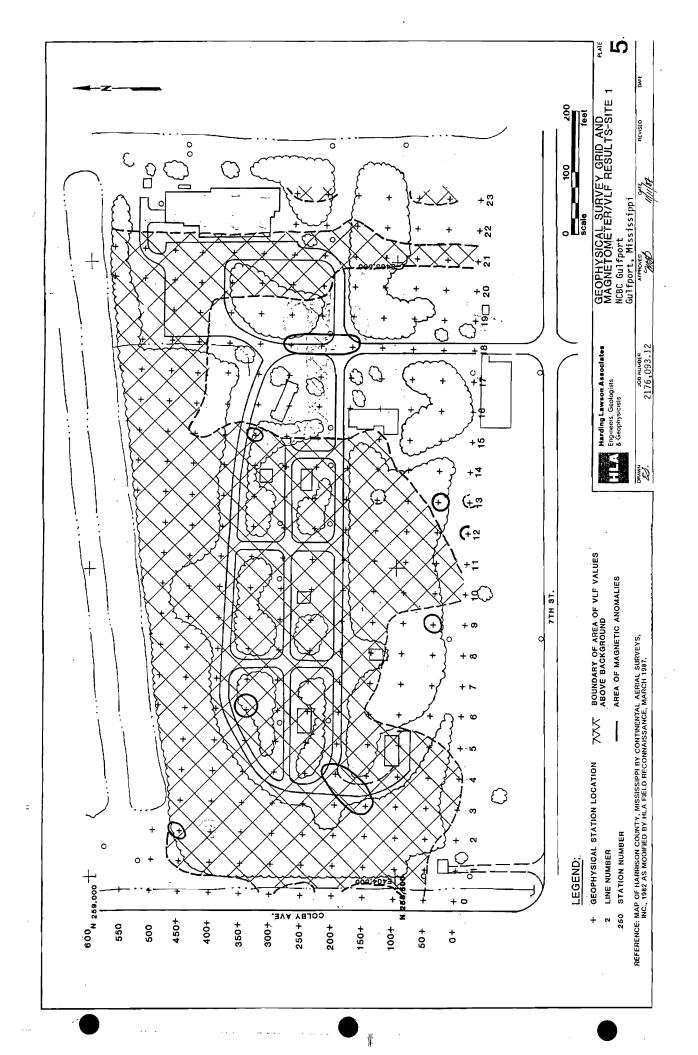
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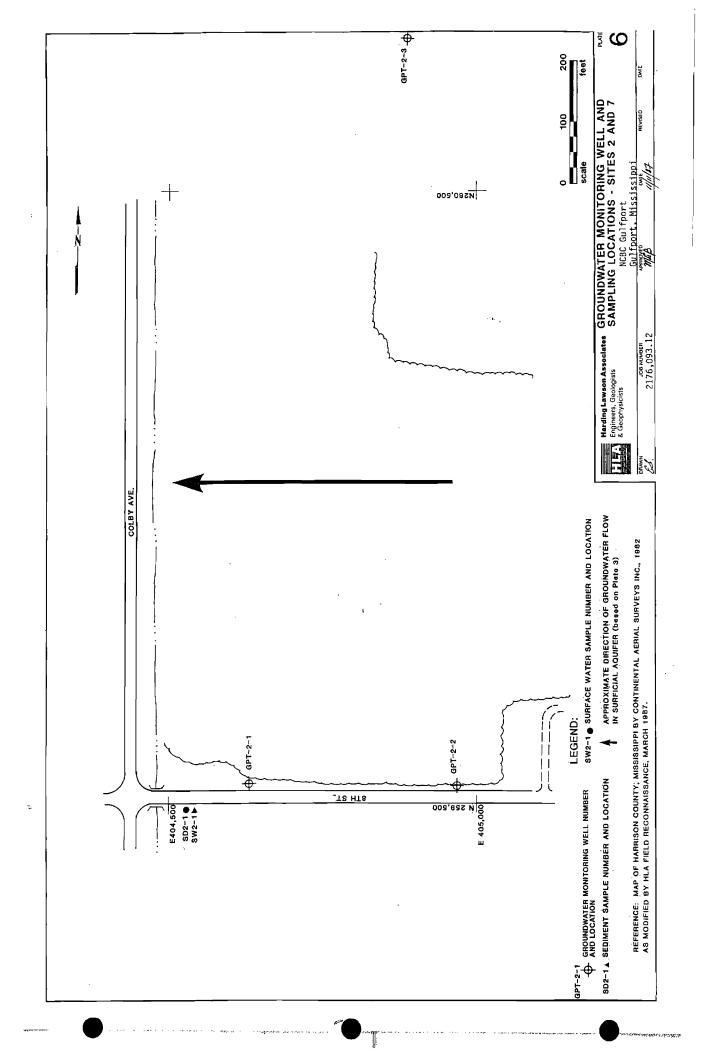
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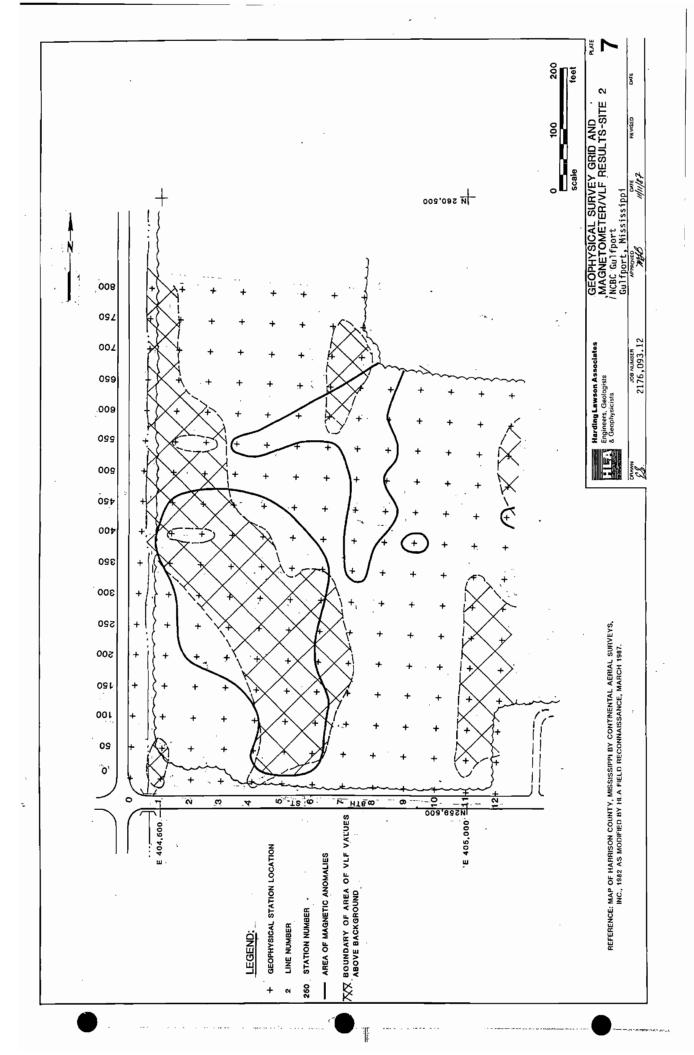








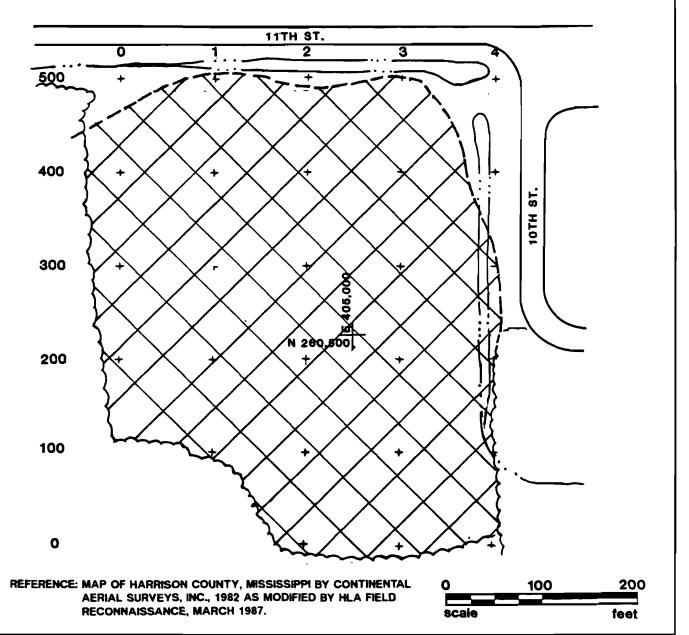






- + GEOPHYSICAL STATION LOCATION
- 2 LINE NUMBER
- 250 STATION NUMBER
- AREA OF MAGNETIC ANOMALIES

BOUNDARY OF AREA OF VLF VALUES ABOVE BACKGROUND





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GEOPHYSICAL SURVEY GRID AND MAGNETOMETER/VLF RESULTS - SITE 7 NCBC Gulfport

8

PLATE

Gulfport, Mississippi

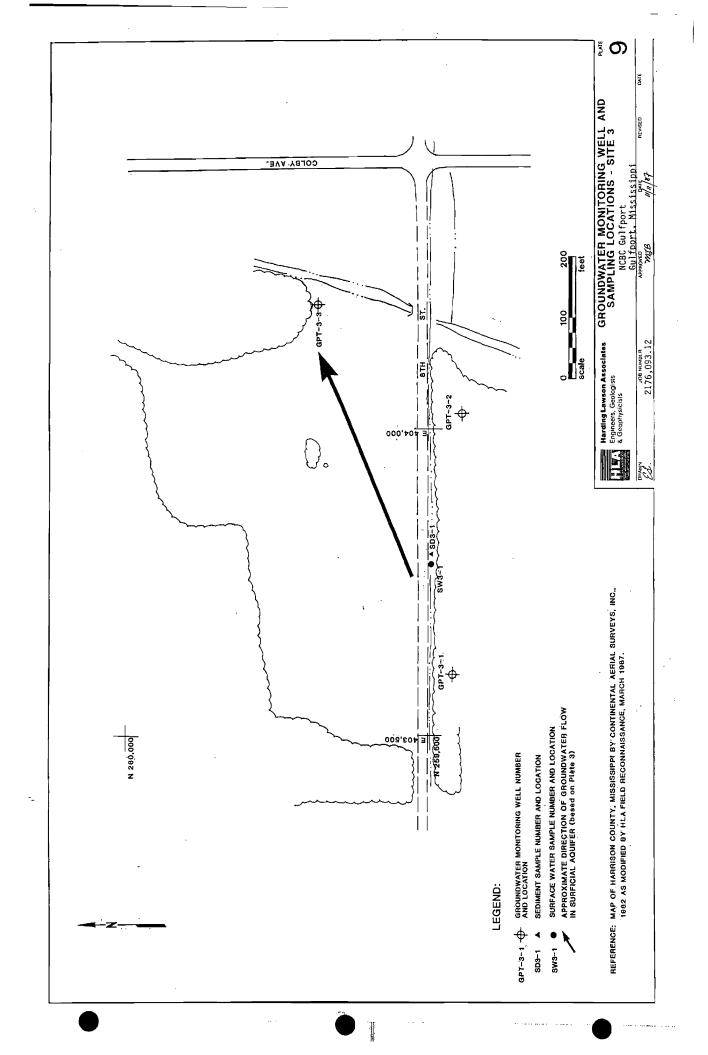
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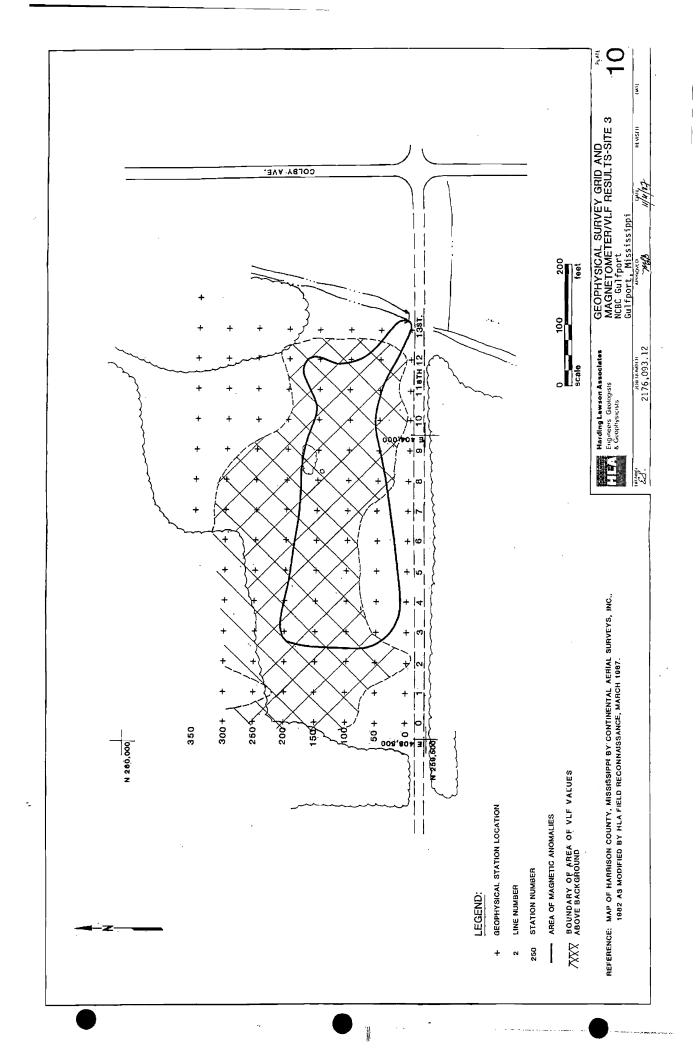
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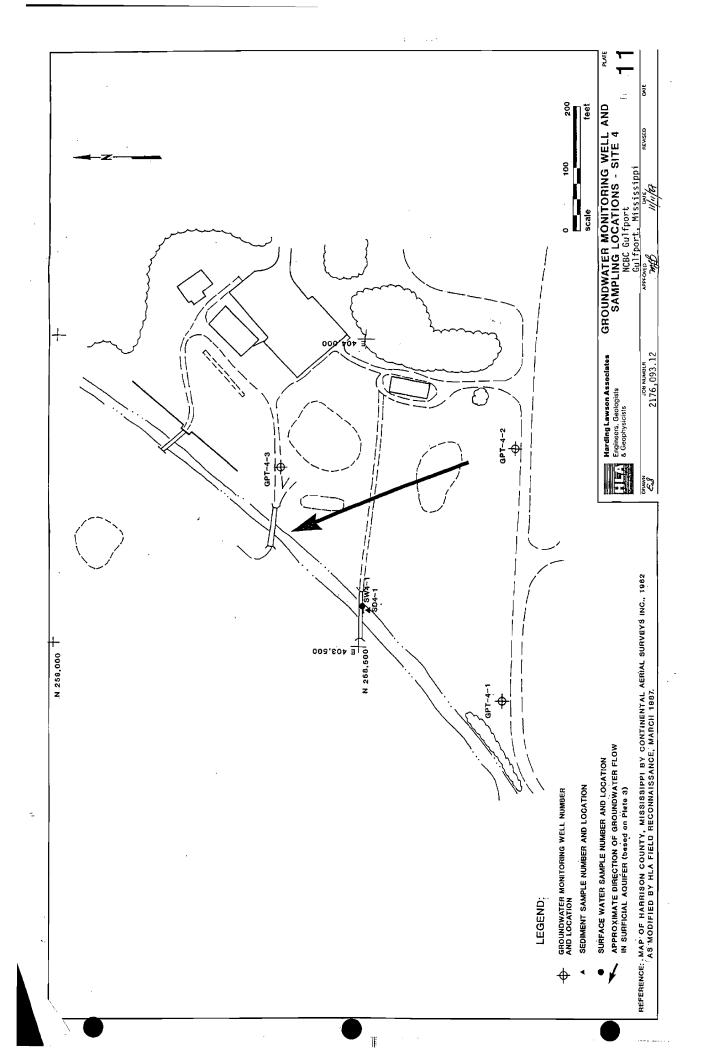
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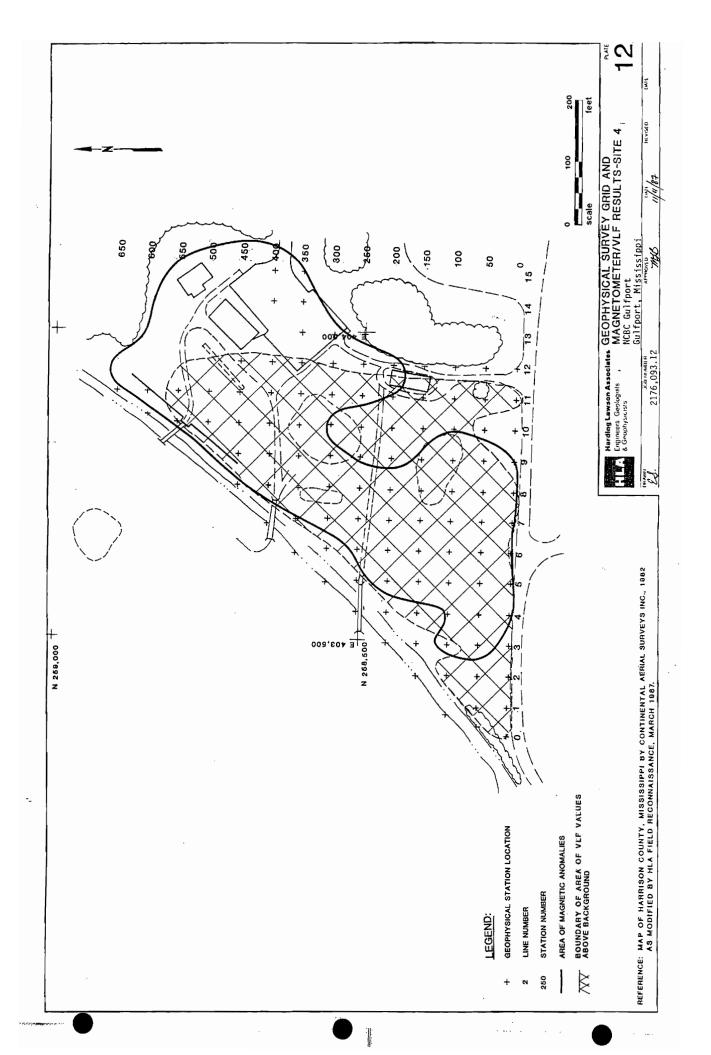
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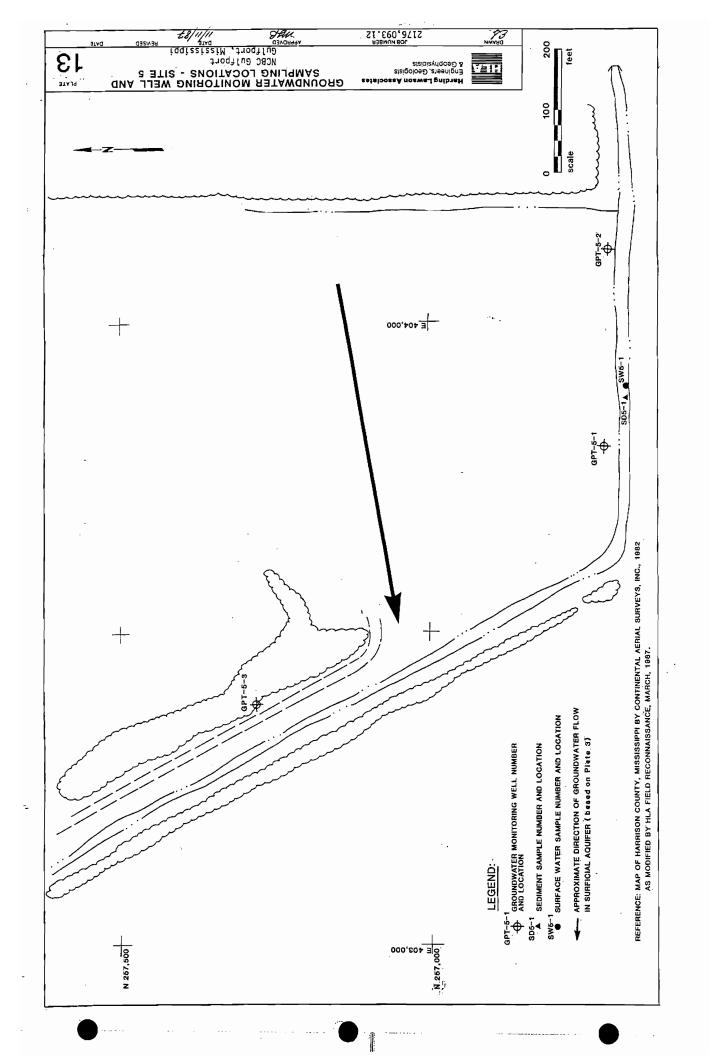
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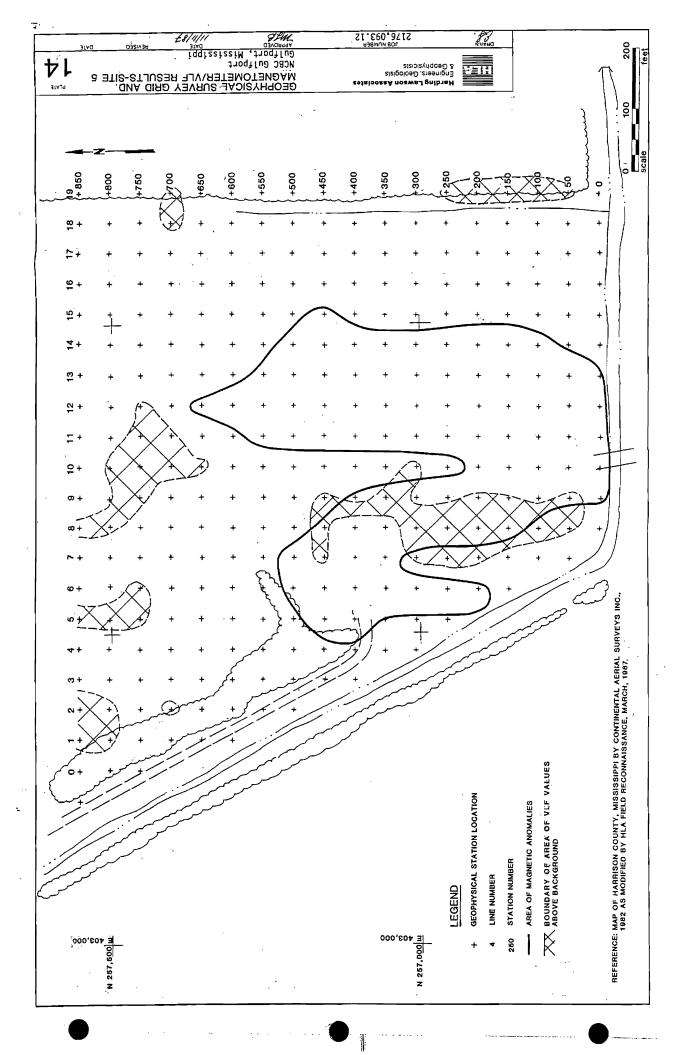


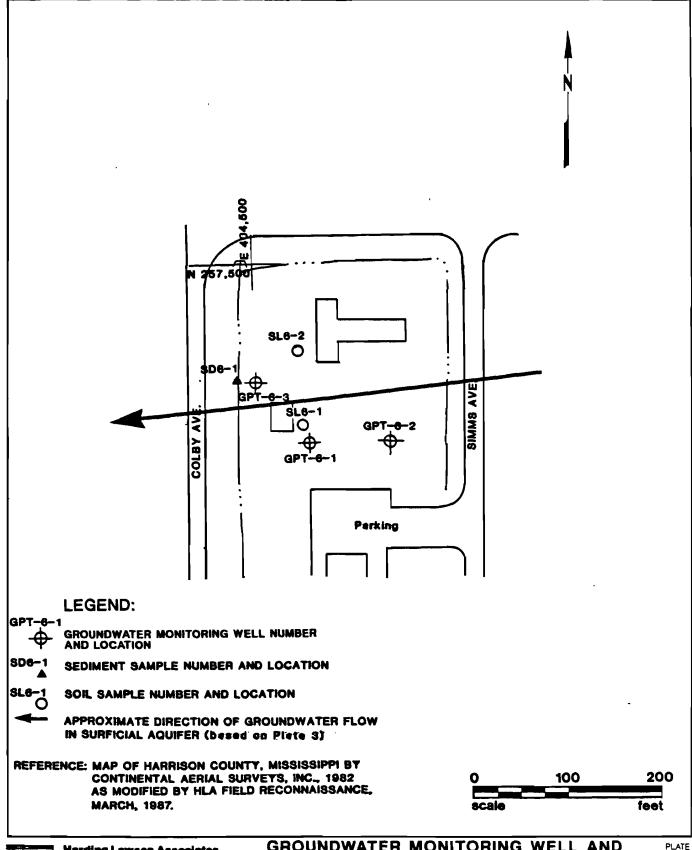














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GROUNDWATER MONITORING WELL AND SAMPLING LOCATIONS - SITE 6

NCBC Gulfport
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15

Gulfport, Mississippi

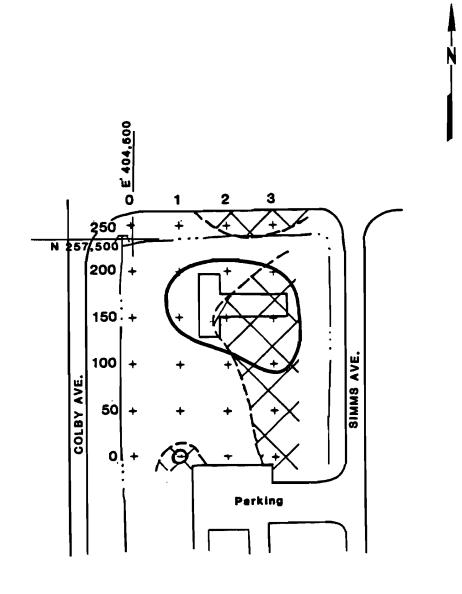
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DATE 11/11/87

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DATE



LEGEND:

- + GEOPHYSICAL STATION LOCATION
- 2 LINE NUMBER
- 250 STATION NUMBER
- ---- AREA OF MAGNETIC ANOMALIES

MAX BOUNDARY OF AREA OF VLF VALUES ABOVE BACKGROUND

REFERENCE: MAP OF HARRISON COUNTY, MISSISSIPPI BY CONTINENTAL AERIAL SURVEYS, INC., 1982 AS MODIFIED BY HLA FIELD RECONNAISSANCE, MARCH 1987.





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GEOPHYSICAL SURVEY GRID AND MAGNETOMETER/VLF RESULTS-SITE 6
NCBC Gulfport

Gulfport, Mississippi

DATE 11/11/87 16

PLATE

DRAWN

JOB NUMBER 2176,093.12

APPROVED.

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TABLES

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TABLE 1

GROUNDWATER MONITORING WELL CONSTRUCTION SUMMARY

(2) } cation	5. 8.	SW, CH SP, SM, CH SM, CH	ж. сн. сн.	SW, CH	55	55
(2) Sof1 Classification	SM, CH CL, CS, S SW, SM, S	ML, SM, SM, SM, SM, ML, SM, SM, SP, S	SM, SP, C	SP, SM, SP, SM, SP, SM, SP, SM, SM, SM, SM, SM, SM, SM, SM, SM, SM	SM, CH SM, SP, C SC, SP, C	SC, SW, CH, CH
Screened Interval Below Ground (feet)	3.0 - 30.0 3.0 - 27.0 3.3 - 25.3	3.0 - 30.0 M 3.0 - 18.0 S 3.0 - 13.0 S	2.5 - 28.5 3.0 - 29.0 2.8 - 25.8	3.0 - 19.0 2.7 - 25.7 3.0 - 26.0	3.0 - 21.0 2.5 - 18.0 4.0 - 21.0	3.0 - 27.5 3.0 - 22.0 3.0 - 22.0
Depth of Boring Below Ground Level (feet)	30.0 27.5 28.0	30.5 20.0 15.0	29.0 29.0 26.0	19.0 28.0 29.0	24.0 19.0 21.5	29.5 23.0 24.0
Height of Top of Casing Above Ground Level	2.5 2.6 3.3	2.5 2.5	2.5	2.5 2.5 2.6	2.5	2.5 2.5 2.1
(1) Elevation of Top of Casing (feet)	28.19 29.40 27.28	25.23 25.32 24.62	25.63 25.43 25.01	24.83 28.76 31.38	29.57 27.55 30.82	31.73 31.93 28.27
Boring/ Well Number	GPT-1-1 GPT-1-2 GPT-1-3	GPT-2-1 GPT-2-2 GPT-2-3	GPT-3-1 GPT-3-2 GPT-3-3	GPT-4-1 GPT-4-2 GPT-4-3	GPT-5-1 GPT-5-2 GPT-5-3	GPT-6-1 GPT-6-2 GPT-6-3

Top of Casing (TOC) elevations referenced to National Geodetic Vertical Datum (NGVD). Note: (1)

⁽²⁾ Unified Soil Classification System Symbols.

TABLE 2

CHEMICAL PARAMETERS IDENTIFIED FOR ANALYSIS OF SEDIMENT, SOIL, AND HATER SAMPLES

	Sunface and Consu	advatas Samalas	Sediment and So	il Camples
	Surface and Grou	Nethod	Analytical	Hethod
			Method	Detection
Parameter	Method Number	Detection Limit	Number	Limit
Paralle Ler	uminst.	LIMIC	N GIIDET	
DH	150.1(1)	0.1 su	3-51(2)	0.01 su
Specific Conductance	120.1(1)	1 umhos	Not App] [cable	
Total Organic Carbon (TOC)	415.2(1)	1 mg/1	DC-80 ⁽³⁾	100 mg/kg
Total Organic Halogen (TOX)	9020(4)	5 µg/1	DX-20 ⁽⁵⁾	200 mg/kg
Chemical Oxygen Demand (COD)	Hach (6)	5 mg/1	3-393(2)	50 mg/kg
011 and Grease (O and G)	413.2(1)	1.0 mg/1	3_284(2)	100 mg/kg
Cadmium (Cd)	213.2(1)	5 μg/l	213.2(1)	3 mg/kg
Chromium (Cr)	218.2(1)	10 µg/1	218.2(1)	5 mg/kg
Lead (Pb)	239.2(1)	5 μg/1	239.2(1)	3 mg/kg
read (FD)	293,2	3 ду/1	207.2	5 mg/ ng
Volatile Organics	624(7)		Not Applicable	
Acrolein		20 µg/1(8)		
Acryonitrile		10		
Benzene		5		
Bromoform		5		
Bromomethane		10		
Carbon Tetrachloride		5		
Chlorobenzene		5		
Chlorodibromomethane		5		
Chloroethane		10		
Chloromethane		10		
2-Chloroethyl Vinyl Ether		10		
Chloroform		5		
Dichlorobromomethane		5		
1.1-Dichloroethane		5		
		5		
1,2-Dichloroethane		5		
1.1-Dichloroethlyene		5		
1,2-Dichloropropane trans-1,3-Dichloropropene		5 5 5 5		
		5		
Ethyl Benzene		5 5 5 5 5 5 5 5 5		
Methylene Chloride		5		
1,1,2,2-Tetrachloroethane		S E		
Tetrachloroethylene		5 E		
Toluene		5		
1,2-trans-Dichloroethylene		5		
1,1,1-Trichloroethane		5		
1,1,2-Trichloroethane		5		
Trichloroethylene				
Trichlorofluoromethane		10		
Vinyl Chloride		10		
cis-1,3-Dichloropropene		10		

CHEMICAL PARAMETERS IDENTIFIED FOR ANALYSIS OF SEDIMENT, SOIL, AND WATER SAMPLES

	Surface and Grou		Sediment and Soil Samples			
	Analytical	Method	Analytical	Method		
Downston.	Method	Detection	Method	Detection		
<u>Parameter</u>	Number	<u>Limit</u>	Number	Limit		
Acid Extractable Organics	625(7)		Not Applicable			
2-Chlorophenol		10 µg/1(8)				
2,4-Dichlorophenol		10				
2,4-Dimethylphenol		10				
4,6-Dinitro-o-cresol		50				
2,4-Dinitrophenol		50				
2-N1trophenol		10				
4-N1trophenol		50				
P-chloro-m-cresol		10				
Pentachlorophenol		50				
Phenol		10				
2,4,5-Trichlorophenol		50				
2,4,6-Trichlorophenol		10				
Base-Neutral						
Extractable Organics	625(7)		Not Applicable			
<u> </u>						
Acenaphthene		10 μg/l ⁽⁸⁾				
Acenaphthylene		10				
Anthracene		10				
Benzidine		50				
Benzo(a)anthracene		10				
enzo(a)pyrene		10				
enzo(b)fluorantheme		10				
Benzo(ghi)perylene		10				
Benzo(k)fluoranthene		10				
bis(2-chloroethoxy)methane		10				
bis(2-chloroethyl)ether		10				
bis(2-chloroisoprophyl)ether		10				
bis(2-ethylhexyl)phthalate		10				
4-Bromophenylphenyl ether		io				
Butyl Benzyl Phthalate		10				
2-Chloronaphthalene		10				
4-Chlorophenyl Phenyl ether		10				
Chrysene		10				
Dibenzo(a,h)anthracene		10				
1.2-Dichlorobenzene		10				
1.3-Dichlorobenzene		10				
1,4-Dichlorobenzene		10				
3.3'-Dichlorobenzidine		20				
Diethylphthalate		10				
Dimethyl Phthalate		10				

TABLE 2 (con't.)

CHEMICAL PARAMETERS IDENTIFIED FOR ANALYSIS OF SEDIMENT, SOIL, AND WATER SAMPLES

	Surface and Grou	ndwater Samples Method	Sediment and So Analytical	il Samples Method
	Method	Detection	Method	Detection
Parameter	Number	Limit	Number	Limit
Base-Neutral				
Extractable Organics (con't.)	625(7)		Not Applicable	
Di-n-butylphthalate		10 µg/1(8)		
1,2-Diphenylhydrazine		10		
2,4-Dinitrotoluene		10		
2.6-Dinitrotoluene		10		
Di-n-octyl Phthalate		10		
Fluoranthene		10		
Fluorene		10		
Hex ach l orobenzene		10		
Hexachi orobutadi ene		10		
Hexachlorocyclopentadiene		10		
Hex ach 1 oroetha ne		10		
Indeno(1,2,3-cd)pyrene		10		
Isophorone		10		
Naphthalene		10		
Nitrobenzene		10		
N-nitrosodi-n-propylamine		10		
N-nitrosodiphenylamine		10		
Phenanthrene		10		
Pyrene		10		
1,2,4-Trichlorobenzene		10		
Pesticides/PCB's	608(7)		Not Applicable	
Aldrin		0.1 µg/](8)		
alpha-BHC		0.1		
be ta-BHC		0.1		
gamma-BHC		0.1		
delta-BHC		0.1		
alpha Chlordane		0.5		
gamma Chlordane		0.5		
4,4'-DDT		0.1		
4,4'-DDE		0.1		
4,4'-DDD		0.1		
Dieldrin		0.1		
alpha-Endosulfan		0.1		
be ta-Endosulfan		0.1		
Endosulfan Sulfate		0.1		
Endrin		0.1		
Endrin Ketone		0.1		
Heptachlor		0.1		

TABLE 2 (con't.)

CHEMICAL PARAMETERS IDENTIFIED FOR ANALYSIS OF SEDIMENT, SOIL, AND WATER SAMPLES

	Surface and Grou	indwater Samples	Sediment and Soil Samples			
Parameter	Analytical Method Number	Method Detection Limit	Analytical Method Number	Method Detection Limit		
Pesticides/PCB's	608(7)		Not Applicable			
Heptachlor Epoxide		0.1 µg/1(8)				
Methoxylchlor		0.5				
PCB-1242		1.0				
PCB-1254		1.0				
PCB-1221		1.0				
PCB-1232		1.0				
PCB-1248		1.0				
PCB-1260		1.0				
PCB-1016		1.0				
Toxaphene		1.0				

- Notes: (1) "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, March 1979.
 - (2) Plumb, R.H., Jr., 1981, Procedures for Handling Sediment and Water Samples, Technical Report EPA/CE-81-1.
 - (3) Dohrmann DC-80 Analysis Specifications.
 - (4) U. S. EPA Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, SW-846, 2nd Edition, U. S. EPA, 1985.
 - (5) Dohrmann DX-20 Analysis Specification.
 - (6) HACH COD Specifications.
 - (7) U.S. EPA Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.
 - (8) All method detection limits for volatile and acid, base-neutral extractable organics and pesticides/PCB's are in $\mu g/l$.

TABLE 3

SUMMARY OF CHEMICAL ANALYSIS
RESULTS, FIELD AND LABORATORY CONTROL SAMPLES

Location	Trip Blank	Decon 1	Decon 2
Sampling Date	-	4/7/87	4/7/87
Temperature pH (field) Specific Conductance (field) pH (laboratory) Specific Conductance (laboratory)		22 7.42 245 8.83 490	21 678 20 5.85 (5.89) 6
TOC TOX COD O and G	:	3 7 24 1.5	< 1 11 19 1.7
Cd Cr Pb	-	< 4.7 < 7.8 < 5.0	< 4.7 < 7.8 < 5.0
Volatile Organics Toluene Chloroform Dichlorobromomethane	(1)	(1) 14 2*	(1) 8
Acid/Base/Neutrals	-	(1)	(1)
Pesticides/PCB's	-	(1)	(1)

Note: All analyses results are reported in $\mu g/l$ except TOC, COD and O and G, which are reported in mg/l. Temperature, pH, and specific conductance are reported in °C, units and $\mu mhos/cm$ at 25°C, respectively.

Results presented in parentheses are for duplicate analyses.

- (1) All chemical parameters not specifically reported were below their analytical detection limit (Table 3).
- Sample not analyzed or measured for these parameters.
- Found below detection limit for analytical method.

GEOLOGIC FORMATIONS IN THE GULFPORT, MISSISSIPPI AREA

Series :	Stratigraphic Unit	Thickness (feet)	Description	Hydrologic Properties
Pleistocene and Recent	Alluvium	0-35+	Chert and quartz gravels, sands, into sandy clays and silts. Localized accumulations of organic debris.	Contains large undeveloped supplies with uniform temperature through year.
Pleistocene	Pamlico Sand	0-75	Unconsolidated gray and tan sand with pebbles of quartz and chert.	Contains much water in beach areas under unconfined condi- tions and in contact with sal water.
	Low Terrace Deposits	0-20	Sand from beach deposits with pebbles of quartz and chert.	Insufficient thickness and areal extent to yield other than small shallow domestic o stock water wells.
	High Terrace Deposits	0-000	Sand and gravel with pebbles of chert and quartz.	Small farm supplies are derived, however, only the lower few feet are generally saturated.
	Citronelle Formation	0-060	Sand and gravelly sand with lenses and layers of clay and clayey gravel.	Numerous small farm supplies derived from a few feet of th basal sand and gravel.
Pliocene and Pleistocene	Craham Ferry Formation	003-975	Silty clay and shale, sand, silty sand, gravelly sand and gravel.	Most intensively developed formation, containing water under confined conditions throughout the area.
Miocene	Pascagoula Pormation	800-0300	Blue-green clay and shale, silt, sandy shale, sand, silty clay, and gravel. Abundant black chert.	Significant quantities of water produced under con- fined conditions with some salt water intrusion observed
	Hattiesburg Pormation	350-0500	Gray-green and blue green shale and clay, gray sand and silt.	Undeveloped fresh water sup- plies in the northern part of the area. The remainder of the formation contains brackish or salt water.
	Catahoula Sandstone	300-560	Shale, sandy shale, sand, clay, silt and gravelly sands.	The uppermost portion contain fresh water and is generally undeveloped in the coastal areas.

Source: Brown, 0944.

TABLE 5

GROUNDWATER ELEVATIONS AT NCBC
GULFPORT MISSISSIPPI, MARCH 30, 1987

Well No.	(1) Screened Interval Below Ground (feet)	Depth to Water Below Ground Surface (feet)	(2) Groundwater Elevation (feet)
GPT-1-1	3.0 - 30.0	1.19	24.50
GPT-1-2	3.0 - 27.0	1.57	25.23
GPT-1-3	3.3 - 25.3	0.82	23.96
GPT-2-1	3.0 - 30.0	2.82	19.91
GPT-2-2	3.0 - 18.0	2.51	20.31
GPT-2-3	3.0 - 13.0	1.19	20.93
GPT-3-1	2.5 - 28.5	1.91	21.22
GPT-3-2	3.0 - 29.0	4.39	18.64
GPT-3-3	2.8 - 25.8	4.31	18.20
GPT-4-1	3.0 - 19.0	0.16	22.17
GPT-4-2	2.7 - 25.7	2.53	23.73
GPT-4-3	3.0 - 26.0	6.94	21.84
GPT-5-1	3.0 - 21.0	4.86	22.21
GPT-5-2	2.5 - 18.0	2.77	22.28
GPT-5-3	4.0 - 21.0	6.97	21.35
GPT-6-1	3.0 - 27.5	4.39	24.84
GPT-6-2	3.0 - 22.0	4.22	25.19
GPT-6-3	3.0 - 22.0	1.45	24.72

Note: (1) Screened interval for each groundwater monitoring well is primarily in the surficial aquifer.

(2) Elevations referenced to NGVD.

TABLE 6
SUMMARY OF CHEMICAL ANALYSIS RESULTS,
ACTIVITY POTABLE WELLS

Location	Well	Well	Well	Well	Well
	No. 1	No. 2	No. 3	No. 4	No. 5
Sampling Date	3/27/87	3/27/87	3/27/87	3/27/87	3/27/87
Temperature pH (field) Specific Conductance (field) pH (laboratory) Specific Conductance (laboratory)	26	25	24	28	24
	9.02	8.73	7.57	8.36	7.49
	740	400	310	320	310
	8.69	9.03	8.30	8.88	8.00
	500 (500)	220	190	190	190
Cd	<4.7	< 4.7	< 4.7	< 4.7	< 4.7
Cr	<7.8	< 7.8	< 7.8	< 7.8	9.0
Pb	<5.0	< 5.0	< 5.0	< 5.0	< 5.0
Volatile Organics	(1)	(1)	(1)	(1)	(1)
Toluene	7	7	11	10	6
Acid/Base/Neutrals Phenol Bis (2-Ethylhexyl) Phthalate	(1) 12 24	(1)	(1) 277 ⁽²⁾	(1)	(1)

Note: 1. All analysis results are reported in $\mu g/l$ except temperature, pH, and specific conductance which are in °C, units and $\mu mhos/cm$ at 25°C, respectively.

- 2. Results presented in parentheses are for duplicate analyses.
- 3. Temperature, pH (field) and Specific Conductance (field) data for groundwater samples are an average of three separate measurements.
 - (1) All chemical parameters not specifically reported were below their analytical detection limit (Table 3).
 - (2) Laboratory analysis and associated calculations were repeated to verify accuracy of reported value.
 - Sample not analyzed or measured for these parameters.
 - * Found below detection limit for analytical method.

SUMMARY OF CHEMICAL ANALYSIS RESULTS, SITE 1

Location	GPT-1-1	GPT-1-2	GPT-1-3	SW1-1_	SW1-2	SW1-3	SW1-4
Sampling Date	3/29/87	3/29/87	3/29/87	3/28/87	3/28/87	3/28/87	3/28/87
Temperature pH (field) Specific Conductance (field) pH (laboratory) Specific Conductance (laboratory)	17 5.03 150 5.61 100	17 4.59 130 5.25 90	15 5.34 200 5.73 120	20 6.00 160 6.46 110	17 7.34 620 7.18 390	20 7.01 100 9.41 62	24 7.64 100 7.10 48
TOC TOX COD O and G	• • •	:	:	6 42 22 1.4	10 228 37 <1.0	6 33 47 1.0	73 (73) 17 1.2
Cd Cr Pb	<4.7 (<4.7 136 (165) 52 (61)	392 (415) 79 (70)	81 66	<4.7 <7.8 <5.0	<4.7 <7.8 <5.0	<4.7 <7.8 <5.0	<4.7 <7.8 <5.0
Volatile Organics Toluene Chloroform Dichlorobromomethane	(1)	(1)	(1)	•	-	-	-
Acid/Base/Neutrals	(1)	(1)	(1)	-	-	-	-

Location	SD1-1	SD1-2	SD2-3	SD1-4	Decon 1	Decon 2
Sampling Date	3/28/87	3/28/87	3/28/87	3/28/87	4/7/87	4/7/87
Temperature pH (field) Specific Conductance (field) pH (laboratory) Specific Conductance (laboratory)	6.15	5.44 (5.49)	- - 5.79	5.84	22 7.42 245 8.83 490	21 6.78 20 5.85 (5.89) 6
TOC TOX COD O and G	6,400 280 5,480 366	4,200 150 (160) 3,530 (3,180) < 122	1,900 210 2,190 < 134	1,000 260 2,670 <131 (<131)	3 7 24 1.5	< 1 11 19 1.7
Cd Cr Pb	3.25.33.4	< 2.9 7.3 < 3.0	<pre></pre>	<3.1 (< 3.1) 7.2 (6.6) <3.3 (<3.3)	< 4.7 < 7.8 < 5.0	<4.7 <7.8 <5.0
Volatile Organics Toluene Chloroform Dichlorobromomethane	-	-	-	-	(1) 14 2*	(1) 8
Acid/Base/Neutrals	-	•	-	-	(1)	(1)

- Note: 1. All analyses results for water samples are reported in µg/l except TOC, COD, and 0 and G which are reported in mg/l. Analyses results for sediment and soil samples are reported in mg/kg. Temperature, pH, and specific conductance are reported in °C, units, and µmhos/cm at 25°C, respectively.
 - 2. Results presented in parentheses are for duplicate analyses.
 - Temperature, pH (field), and Specific Conductance (field) data for groundwater samples are an average of three separate measurements.
 - (1) All chemical parameters not specifically reported were below their analytical detection limit (Table 3).
 - Sample not analyzed or measured for these parameters.
 - * Found below detection limit for analytical method.

TABLE 8
SUMMARY OF CHEMICAL ANALYSIS RESULTS, SITE 2

Location	GPT-2-1	GPT-2-2	GPT-2-3	SW2-1	SD2-1	Decon 1	Decon 2
Sampling Date	3/28/87	3/28/87	3/28/87	3/26/87	3/26/87	4/7/87	4/7/87
Temperature	20	18	17	20	-	22	21
pH (field)	5.99	5.49	5.19	7.41	•	7.42	6.78
Specific Conductance (field)	230	210	660	270	-	245	20
pH (laboratory)	6.42	5.66	5.61	7.52 (7.48)	5.80	8.83	5.85 (5.89)
Specific Conductance (laboratory)	160	120	440	200 (200)	•	490	6
TOC	-	-	-	10	2,800	3	< 1
TOX	-	-	-	73	300	7	11
COD	-	-	-	40 (35)	8,240	24	19
0 and G	-	-	-	1.5	< 123	1.5	1.7
Cd	< 4.7	< 4.7	< 4.7	< 4.7 (<4.7)	<2.9 (<2.9)	< 4.7	< 4.7
Cr	26	73	21	< 7.8 (<7.8)		< 7.8	< 7.8
Pb	20	41	13	< 5.0 (<5.0)	4.7 (3.7)	< 5.0	< 5.0
Volatile Organics 1,2-trans-Dichloroethylene	(1)	(1)	(1) 37	-	-	(1)	(1)
Trichloroethylene			5				•
Toluene			1*			• • •	8
Chloroform Dichlorobromomethane						14 2*	
· · · · · · · · · · · · · · · · · ·						_	
Acid/Base/Neutrals bis (2-Ethylhexyl) Phthalate	(1)	(1)	(1) 21	-	-	(1)	(1)

Note: 1. All analyses results for water samples are reported in µg/l except TOC, COD, and O and G which are reported in mg/l. Analyses results for sediment and soil samples are reported in mg/kg.

Temperature, pH, and specific conductance are reported in .C, units, and µmhos/cm at 25.C, respectively.

- 2. Results presented in parentheses are for duplicate analyses.
- Temperature, pH (field), and Specific Conductance (field) data for groundwater samples are an average of three separate measurements.
 - (1) All chemical parameters not specifically reported were below their analytical detection limit (Table 2).
 - Sample not analyzed or measured for these parameters.
 - * Found below detection limit for analytical method.

TABLE 9
SUMMARY OF CHEMICAL ANALYSIS RESULTS, SITE 3

Location	GPT-3-1	GPT-3-2	GPT-3-3	SW3-1	SD3-1	Decon 1	Decon 2
Sampling Date	3/28/87	3/28/87	3/28/87	4/7/87	5/4/87	4/7/87	4/7/87
Temperature pH (field) Specific Conductance (field) pH (laboratory) Specific Conductance (laboratory)	17 5.24 180 5.75 140	15 4.96 100 4.66 140	19 4.88 120 5.41 80	16 6.12 95 6.06 92	4.76 (4.78)	22 7.42 245 8.83 490	21 6.78 20 5.85 (5.89
TOC TOX COD O and G	- - -	•	- - -	8 29 28 2.1 (2.2)	4800 < 200 1450 (1280) < 123 (< 123)	3 7 24 1.5	< 1 11 19 1.7
Cd Cr Pb	< 4.7 40 26	< 4.7 71 35	<4.7 45 17	<4.7 (<4.7) <7.8 (<7.8) <5.0 (<5.0)	5.0	< 4.7 < 7.8 < 5.0	<4.7 <7.8 <5.0
Volatile Organics Toluene Chloroform Dichlorobromomethane	(1)	(1)	(1)	-	-	(1) 14 2*	(1) 8
Acid/Base/Neutrals	(1)	(1)	(1)	-	-	(1)	(1)

- Note: 1. All analyses results for water samples are reported in µg/l except TOC, COD, and O and G which are reported in mg/l. Analyses results for sediment and soil samples are reported in mg/kg.

 Temperature, pH, and specific conductance are reported in "C, units, and µmhos/cm at 25."C, respectively.
 - 2. Results presented in parentheses are for duplicate analyses.
 - Temperature, pH (field) and Specific Conductance (field) data for groundwater samples are an average of three separate measurements.
 - All chemical parameters not specifically reported were below their analytical detection limit (Table 3).
 - Sample not analyzed or measured for these parameters.
 - * Found below detection limit for analytical method.

TABLE 10
SUMMARY OF CHEMICAL ANALYSIS RESULTS, SITE 4

Location	GPT-4-1	GPT-4-2	GPT-4-3	SW4-1	<u>504-1</u>	Decon 1	Decon 2
Sampling Date	3/29/87	3/29/87	4/7/87	4/7/87	4/7/87	4/7/87	4/7/87
Temperature	16	16	20	20	-	22	21
pH (field)	5.18	6.36	6.86	7.21	-	7.42	6.78
Specific Conductance (field)	470	330	1600	140	-	245	20
pH (laboratory)	5.58	6.75	7.05	6,60	6.31	8.83	5.85 (5.89)
Specific Conductance (laboratory)	370 (370)	210	1600	120	•	490	6
TOC	•	_	-	7	30,000	3	< 1
TOX	_	-	-	60 (60)	340	3 7	11
COD	-	-	-	20	5,140	24	19
0 and 6	-	-	•	3.0	442 (422)	1.5	1.7
Cd	< 4.7	< 4.7	< 4.7	< 4.7	< 4.6	< 4.7	<4.7
Cr	72	22	155	₹ 7.8	19	< 7.8	<7.8
Pb	50	5.4	124	₹ 5.0	39	₹ 5.0	<5.0
Volatile Organics	(1)	(1)	(1)	-	-	(1)	(1)
Toluene	,	,-,	,-,			,	`-Ř
Chloroform						14	•
Dichlorobromomethane						2*	
Acid/Base/Neutrals	(1)	(1)	(1)	-	_	(1)	(1)

- Note: 1. All analyses results for water samples are reported in µg/l except TOC, COO, and O and G which are reported in mg/l. Analyses results for sediment and soil samples are reported in mg/kg. Temperature, pH, and specific conductance are reported in C, units, and µmhos/cm at 25°C, respectively.
 - 2. Results presented in parentheses are for duplicate analyses.
 - Temperature, pH (field), and Specific Conductance (field) data for groundwater samples are an average of three separate measurements.
 - (1) All chemical parameters not specifically reported were below their analytical detection limit (Table 3).
 - Sample not analyzed or measured for these parameters.
 - * Found below detection limit for analytical method.

TABLE 11
SUMMARY OF CHEMICAL ANALYSIS RESULTS, SITE 5

Location	6PT-5-1	GPT-5-2	GPT-5-3	SW5-1	SD5-1	Decon 1	Decon 2
Sampling Date	3/29/87	3/29/87	3/29/87	4/7/87	3/27/87	4/7/87	4/7/87
Temperature	18	18	16	22	-	22	21
pH (field) Specific Conductance (field) pH (laboratory) Specific Conductance (laboratory)	5.70 110 6.19 72	5.16 80 5.66 80	5.22 120 5.42 100	6.72 90 6.50 140	5.12 (5.09)	7.42 245 8.83 490	6.78 20 5.85 (5.89) 6
TOC TOX COD O and G	:	:	- - -	6 327 <5 (<5) 1.3	1,800 280 (250) 1530 (1650) 301	3 7 24 1.5	< 1 11 19 1.7
Cd Cr Pb	< 4.7 79 39	< 4.7 104 48	< 4.7 91 35	21 < 7.8 < 5.0	< 3.0 < 5.0 < 3.2	< 4.7 < 7.8 < 5.0	< 4.7 < 7.8 < 5.0
Volatile Organics Toluene Chloroform Dichlorobromomethane	(1)	(1)	(1)	-	-	(1)	(1) 8
Acid/Base/Neutrals	(1)	(1)	(1)	-	•	(1)	(1)
Pesticides/PCB's	(1)	(1)	(1)	-	-	(1)	(1)

- Note: 1. All analyses results for water samples are reported in µg/l except TOC, COD, and 0 and G which are reported in mg/l. Analyses results for sediment and soil samples are reported in mg/kg.

 Temperature, pH, and specific conductance are reported in °C, units, and µmhos/cm at 25°C, respectively.
 - 2. Results presented in parentheses are for duplicate analyses.
 - Temperature, pH (field), and Specific Conductance (field) data for groundwater samples are an average of three separate measurements.
 - All chemical parameters not specifically reported were below their analytical detection limit (Table 3).
 - Sample not analyzed or measured for these parameters.
 - * Found below detection limit for analytical method.

SUMMARY OF CHEMICAL ANALYSIS RESULTS, SITE 6

Location	GPT-6-1	GPT-6-2	; GPT-6-3	SD6-1	SL6-1	2-9TS	Decon 1	Decon 2
Sampling Date	4/1/87	3/29/87	3/29/87	3/26/87	3/26/87	3/26/87	18/1/4	4/1/87
Temperature pH (field) Specific Conductance (field) pH (laboratory) Specific Conductance (laboratory)	21 4.91 95 5.23 (5.21) 5 y)	18 4.94 120 11) 5.44	19 4.85 140 5.10 110	5,26	6.95	- - 5.75 (5.70)	22 7.42 245 8.83 490	21 6.78 20 5.85 (5.89) 6
TOC TOX COD 0 and 6	• • • •		1 1 1 1	5,500 < 200 3,800 < 132	11,800 210 9,450 7,248	5,100 380 (370) 3770 (3750) 135	24 1.5	11 119 1.7
55 a	< 4.7 72 70	< 4.7 38 21	< 4.7 30 26	4.14.1	× 2.6 3.3 3.3	< 2.6 7.7 6.9	< 4.7 < 7.8 5.0	< 4.7 < 7.8 < 5.0
Volatile Organics 1,1-Dichloroethane 1,2-Dichloroethane Toluene Chloroform Dichlorobramenthane	3	3	(1) 2* 5	•	1	•	14 24	£ 8
Acid/Base/Neutrals	Ξ	Ξ	(1)	•	•	•	(1)	(1)

All analyses results for water samples are reported in ug/l except TOC, COD, and O and G which are reported in mg/l. Analyses results for sediment and soil samples are reported in mg/kg. Temperature, pH, and specific conductance are reported in °C, units, and µmhos/cm at 25.°C, respectively. Note: 1.

2. Results presented in parentheses are for duplicate analyses.

Temperature, pH (field), and Specific Conductance (field) data for groundwater samples are an average of three separate measurements. . ب

(1) All chemical parameters not specifically reported were below their analytical detection limit (Table 3).

Sample not analyzed or measured for these parameters.

* Found below detection limit for analytical method.

APPENDIX A

Field Techniques and Equipment

APPENDIX A-1

SURFACE GEOPHYSICAL SURVEYS

Instrumentation

Surface geophysical surveys were conducted at the NCBC Gulfport to detect buried metal and attempt to delineate landfill boundaries. To accomplish this, two instruments were operated simultaneously: A magnetometer to detect metal objects and a Very Low Frequency (VLF) electromagnetic sensor to detect changes in the electrical conductivity of the soil. These two instrument options were connected to a single microprocessor and keypad known as the Integrated Geophysical System (IGS), manufactured by Scintrex of Ontario, Canada. Both the magnetometer (used in this application to measure total magnetic field without a base station) and the VLF measure relative values, in other words, the variations and/or trends in readings from station to station and line to line are of more importance than the value of the individual readings. The IGS unit recorded the magnetometer and VLF data digitally in its microprocessor and recalled it at a later time by "dumping" onto a printer.

An EM-31, manufactured by Geonics Ltd. was used for utility and buried metal clearance at the boring/well locations. It is capable of measuring both absolute and relative values of millimohs/cm, but in

this application only the relative readings were utilized. The EM-31's data is displayed as readings on a meter located on the face of the instrument.

1. Magnetometer - The magnetic technique consists of measuring local variations in the intensity of the earth's magnetic field due to the presence or absence of metal objects. stances, when subject to the earth's magnetic field, acquire a certain intensity of magnetization. The physical parameter which relates the intensity of magnetization to the strength of the magnetic field is called the magnetic susceptibility. Metallic objects have a high magnetic susceptibility and, as a consequence, their presence in the subsurface will slightly modify the earth's field. The total magnetic field becomes greater or less depending on the sign (positive or negative) of the object's magnetic susceptibility. The magnetometer, therefore, measures the total magnetic field and variances from local background readings are assumed to represent the presence of metallic objects. It is important to record the presence of known features (buildings, pipelines, reinforced concrete, etc.) so that anomalies in the total field can be correlated to unknown rather than existing features.

- weasures local variations in the components of the electromagnetic fields which are set up by radio waves transmitted from communication stations operating at various locations throughout the world. The ground wave of the VLF radiowave has three components, but for this application, the horizontal magnetic field was the primary measurement. If the transmitted VLF field strength is constant, changes in the measured horizontal magnetic field mainly reflect variations in the electrical conductivity of the subsurface material. These variations in the electrical conductivity can possibly represent the difference between natural soil and landfill material and possibly contaminated and uncontaminated shallow groundwater.
- 3. <u>EM-31</u> The Electromagnetic (EM) technique involves setting up an electromagnetic field with a transmitter coil in the instrument. Through inductive coupling, this magnetic field causes small currents to flow in the earth and they, in turn, induce their own small secondary magnetic field. Both the primary and secondary fields are sensed by the receiver coil in the instrument. Gradual changes in measurements can be due to changes in the electrical conductivity of subsurface materials, whereas abrupt changes generally occur over metal objects.

Field Procedures

Grids were established at each site by using a surveyor's tape and compass to measure off an east-west oriented baseline. Perpendicular north-south trending lines were established at 50-foot intervals along the baseline. Line numbers progressed (in single digits) from zero upward moving from west to east. Using a hip-chain and compass, the station locations on each individual line were marked with pin flags every 50 feet progressing northward from the baseline (station locations were identified by number of feet north of the baseline). The size of the grid, in either the northerly or easterly direction, was designed to overlap each site as defined by the initial site characterization presented in the IAS report.

After a site grid was established with pin flags at station locations, the Scintrex IGS was prepared by programming into memory constant parameters (date, time, site number, line separation, station separation, and type of measurements to be taken). With the ease of data acquisition, VLF measurements were made from two different transmitter stations providing two sets of data for comparison purposes (only a single data set was used for each site analysis and these data are presented in Appendix B). Measurements were taken at station locations progressing in one direction along a line. The IGS unit (with the help of the operator) records line number, station number, and all data at each station. Data recorded at each station included: line,

number, station number, Magnetometer - total field, VLF Station 1 - horizontal magnetic field, VLF Station 2 - horizontal magnetic field, and time. Before measurements were taken at each site, the baseline (Station 0) was transversed and measurements were recorded at each line. This data was later compared with the survey Station 0 data at each line to detect any drift or interference in the instrument.

In accordance with the site safety plan, the HNu meter was used during the surface geophysical survey to monitor the relative concentration of vapors in the vicinity of field activities. All personnel utilized level D personal protection equipment during all of the survey activities.

Upon completion of each day's field work, the IGS unit was removed from the field and interfaced with an Epson printer and the day's data was "dumped" onto a paper copy. Subsequently, the IGS unit's memory could be erased in preparation for the next day's work and all of the field data could be reviewed in an organized and easy-to-read format to check for anomalous data and areas of possible concern.

All of the geophysical data was processed manually. Background magnetometer and VLF values were recorded at each site. The magnetometer data was plotted in profile form and the locations of anomalies of 200 Gammas, or greater, above or below background were marked on the site maps at the proper line and station. These anomalies occurred, for

the most part, in distinct areas along a number of lines and the boundary to those overall areas was plotted. Because fluctuations occur in the VLF transmissions it became necessary to calculate several background values for the data at each site (Appendix B). Background values were determined by averaging all available readings taken outside of the suspected site. In processing the data, when it became apparent from data values, that the VLF transmissions had changed, a new background value was calculated. The readings from each station were divided by the appropriate background values and multiplied by 100 to calculate the percent change above or below background. This data was plotted on the site map and contoured. In summary, the magnetometer and VLF data for each site are related to the local background values rather than absolute values.

The data from the EM-31 was observed in the field to assure that boring/well locations were not sited in an area of high metal concentrations. The operator made a "Cross" pattern approximately 50 feet in each direction away from the proposed location. If the EM-31 showed the area to be clear of buried metal and/or utilities, the boring/well location was marked. If the EM-31 indicated the presence of subsurface metal and/or utilities, the boring/well location was moved until a suitable location was found. No direct data from the EM-31 was recorded.

showed the area to be clear of buried metal and/or utilities, the boring/well location was marked. If the EM-31 indicated the presence of subsurface metal and/or utilities, the boring/well location was moved until a suitable location was found. No direct data from the EM-31 was recorded.

APPENDIX A-2

SOIL BORINGS AND SAMPLING

The boreholes were drilled by Southwestern Laboratories, Inc. (SWL) under subcontract to HLA. SWL utilized a CME truck-mounted drill rig. Borings were advanced with 6 3/4-inch-diameter hollow-stem augers. All drilling equipment, including augers, center rod, and hand tools were decontaminated with a high pressure washer and a pressurized steam cleaner before drilling each well. All decontamination water and soil were collected in a plastic lined pit and then stored in steel drums on-site for disposal by the Navy.

Below the groundwater level, flowing sands were encountered and clean water was pumped into the auger to flush out the sand. Continuous samples were obtained at Sites 3 and 5 by advancing the auger in five-foot intervals with a split inner sample barrel. At the other sites, continuous samples were collected to ten feet, then obtained in five-foot intervals by driving a split-spoon smapler in two-foot intervals with a 140-pound hammer. Samplers were decontaminated prior to collection of each soil sample, using a trisodium phosphate wash and clean water rinse. All samples were examined and logged on-site by an HLA engineer/geologist. Samples were scanned with the HNu meter then placed in clean jars if no volatiles were detected. Samples which contained detectable volatiles were sealed in clean amber glass jars with teflon-lined lids. Each jar was labeled with date, boring

number, and depth of sample. Samples containing detectable volatiles were stored in chilled containers for shipment and storage at the JTC Laboratory. No analyses were performed pending results from the groundwater sample analyses. Drill cuttings from each well were placed in steel drums on-site for disposal by the Navy. Refer to Appendix D for complete chemical analyses.

In accordance with the site safety plan, the HNu meter was used during drilling operations to monitor the relative concentration of volatile organic vapors in the immediate vicinity of drilling and sampling operations. In addition, a combustible gas indicator/explosimeter (MSA Model 100) was used to monitor the level of potentially explosive fumes at the open borehole. All personnel utilized Level C personal protection equipment during drilling and sampling activities, as prescribed by the Site-Specific Job Health and Safety Plan.

APPENDIX A-3

MONITORING WELL INSTALLATION

Each borehole drilled was converted into a monitoring well and labeled according to SODIV guidelines as presented in the Work Plan. All wells were set before removal of the augers, hence no drilling mud was required to prevent caving of the borehole.

Based on the saturation of samples and drill cuttings observed during drilling operations, it was determined that the monitor wells should be screened from approximately 3.0 feet below ground surface to the top of the underlying clay layer. The monitor wells were constructed by placing sections of 2-inch I.D. Schedule 40 PVC pipe with 0.02-inch slots inside the hollow-stem auger. Blank Schedule 40 PVC pipe was attached to the top of the screen and extended to approximately 2.5 feet above the ground surface. The annular space was then backfilled with washed No. 1 10-20 filter sand by pouring inside the auger then pulling the auger to allow the sand to flow around the screen. filter pack was placed to approximately one foot above the screened interval. A material analysis for the filter pack is presented in Table Al. A bentonite seal, approximately 1.5 feet thick, was placed on top of the filter sand and the remainder of the annulus was grouted with cement/bentonite grout and capped to preclude any surface water from entering the well. All of the wells were protected with a

Table Al Filter Pack Material Analysis

Pearl Specialty Sand

Type of Material: 10-20

Permeability - 24,200 gpd/ft²

Sieve Analysis

Weight Analyzed: 300 grams

Sieve Size	Weight Retained (grams)	Percent Retained
No. 6	0	0
No. 8	0	0
No. 10	6.4	2.1
No. 12	104.7	34.9
No. 16	173.4	57.8
No. 20	12.6	4.2
No. 25	2.0	0.6
No. 30	Trace	Trace
Pan	Trace	Trace

5-foot long, 4-inch square steel surface casing with a hinged locking lid and 3-foot x 4-foot x 6-inch concrete pad. For wells located in areas of heavy vehicular traffic, four concrete-filled 4-inch x 6-foot steel posts were set in the corners of the concrete pads for extra protection.

Prior to any groundwater sampling, each monitoring well was developed by pumping 10 to 15 well volumes to remove any sediments introduced during well construction and to assure response of the well to local groundwater conditions. Monitoring wells at Sites 1, 2, 3, and 4 were developed using a two-inch gas powered centrifugal pump. Monitoring wells at Sites 5 and 6 were developed using a three-inch gas powered diaphragm pump. The intake hose for the pump was decontaminated with trisodium phosphate wash and rinsed with the clean water before being inserted into each well. All development water was pumped or bailed into steel drums on site for disposal by the Navy.

In accordance with the site safety plan, the HNu meter was used during well installation and development to monitor the relative concentration of volatile organic vapors in the vicinity of field activities. All personnel utilized Level D personal protection equipment during well installation and development activities as prescribed in the Site Specific Job Health and Safety Plan.

APPENDIX A-4

SEDIMENT, SOIL, AND WATER SAMPLING

Immediately after monitoring well installation and well development were completed, site sampling activities were initiated. Items to be sampled included groundwater from five existing potable water wells and eighteen monitoring wells, sediment and surface water from drainage ditches and ponds, and soil from areas adjacent to old burning pits.

Groundwater samples were first collected from the five existing potable water wells. Groundwater levels were measured in each well and then each well was pumped fro about 15 minutes to remove "stagnant" water spigots, in clean containers, sealed with teflon-lined lids, labeled and stored in chilled containers for shipment to JTC. No decontamination procedures were required for this sampling since no intermediate sampling equipment was used. Each sample was collected directly into the laboratory container. At the time of sampling, field temperature, pH, and specific conductance were measured. Testing equipment was rinsed with deionized water prior to monitoring at each location. Two production wells, which had been chosen for sampling in the work plan, could not be sampled because the wells are no longer functional.

Following well development, groundwater samples were collected from each of the 18 monitoring wells for chemical analysis. The wells presumed to be upgradient at each site were anticipated to be less contaminated than the other two wells, and were therefore sampled first. Prior to sampling, groundwater levels were measured and presampling ("stagnant") water was removed by pumping appoximately 5 to 10 well volumes from each well. Any sediments remaining in the well as a result of earlier development were also removed. Before pumping each well, the intake line was decontaminated with a double trisodium phosphate wash, double clean water rinse, and deionized water rinse. A new section of intake hose was used at each site location. The presampling water was pumped into steel drums on-site for disposal for disposal by the Navy.

Immediately following presampling pumping, the field temperature, pH, and specific conductance were measured until three consecutive consistent measurements were obtained. The instruments were rinsed with deionized water prior to each test. Once consistent consecutive readings were obtained, groundwater samples were collected.

Groundwater samples were collected utilizing a 5-foot long, 1-1/4-inch I.D. PVC bailer. The bailer was decontaminated with a double trisodium phosphate wash, double clean water rinse, and a deionized water rinse prior to sampling of each well. The rope used to raise and lower the bailer was replaced after sampling each well. Sample

water was poured into clean sample containers, sealed with teflon-lined lids, labeled, and placed in chilled containers for shipment to JTC.

Sediment and surface water samples were collected from drainage ditches and ponds adjacent to the areas of investigation. Sediment samples were collected from drainage ditches and ponds adjacent to the investigation sites using a 1-3/4-inch I.D. stainless steel hand auger. Samples were collected at a depth of 0 to 12 inches. The samples were extruded into clean amber glass jars, sealed with teflonlined lids, labeled, and placed in chilled containers for shipment to JTC. Prior to collection of each sample, the hand auger was decontaminated with trisodium phosphate wash, clean water rinse, and deionized water rinse.

Surface water samples were collected from drainage ditches and ponds adjacent to the investigation sites, at the same locations as the sediment samples. The water samples were collected by submerging a clean sealed sample container 1 to 9 inches below the water surface, then removing the lid to allow the water to flow into the container. Sample containers which already had preservatives were filled by pouring water from a clean container filled by the previously mentioned method. Each sample container was sealed with a teflon-lined lid, labeled, and stored in chilled containers for shipment to JTC.

The field temperature, pH, and specific conductance of each surface water sample was measured and recorded. The field testing was performed immediately following sampling utilizing equipment and instruments prerinsed with deionized water.

Two soil samples were collected at Site 6, adjacent to the approximate locations of the old burning pits. The two samples were collected at a depth of approximately 6 to 20 inches utilizing the hand auger. Decontamination of the hand auger was performed prior to collection of each sample with a trisodium phosphate wash, clean water rinse and deionized water rinse. The soil was extruded into clean amber glass jars, sealed with telfon-lined lids, labeled, and placed in chilled containers for shipment to the JTC laboratory.

As part of the JTC QA/QC plan, background water samples were collected. These samples included fresh groundwater and fresh deionized water. Groundwater samples were collected from the same spigot (base potable water supply) that the clean water for the decontamination rinse was taken. The same brand deionized waste (commerically bottled) used for the decontamination rinse was also sampled. The QA/QC samples were placed in clean sample containers, sealed with teflon-lined lids, labeled, and stored in chilled containers for shipment to JTC. A set of trip blanks were packed in the same chilled containers as other samples to check for cross contamination during shipment.

All water and soil accumulated during sampling decontamination activities were stored on site in steel drums for disposal by the Navy.

Refer to Appendix E for complete data on laboratory analysis and physical parameters measured in the field.

In accordance with the site safety plan, the HNu meter was used during sampling activities to monitor the relative concentration of volatile organic vapors in the vicinity of field activities. All personnel utilized Level D personal protection equipment as prescribed by the Site Specific Job Health and Safety Plan.

APPENDIX B

Geophysical Data

Station (Feet)	Site 1 Line O MAG (Gammas)	VLF (Au)	VLF % Chg.	Comments	Station (Feet)	Site 1 Line I MAG (Gammas)	VLF (Au)	YLF % Chq.	Comments
0 50 100 150 200 250 300	50514 50508 50550 50533 50610 50630 50630	2.80 2.99 2.90 2.92 3.02 2.84 3.01	97 104 101 101 105 99 105		0 50 100 150 200 250 300	50836 50206 50557 50616 50656 50638 50657	2.65 3.23 3.09 3.06 3.16 2.99 3.13	92 112 107 106 110 104 119	
350 400 450	50604 50644 50638	2.91 2.90 2.90	101 101 101		350 400 450	50642 50650 50666	3.00 2.96 3.09	104 103 107	
	Site 1 Line 2					Site 1 Line 3			
0 50 100 150 200 250 300 350 400 450	50666 50467 50563 50603 50721 50815 50528 51077 56474	2.85 2.98 3.08 3.10 3.19 3.07 3.13 2.90 2.96 3.19	99 103 107 108 111 107 109 101 103		0 50 100 150 200 250 300 350 400 450	50554 50549 50555 49999 50544 50549 50623 50659 50638 50629	3.04 2.96 3.10 3.09 3.17 3.21 3.18 3.15 3.07	106 103 108 107 110 111 111 110 109 107	
	Site 1 Line 4					Site 1 Line 5			
0 50 100 150 200 250 300 350 400 450	50623 50549 50597 50604 49273 50756 50589 50582 50581	2.95 2.99 3.25 3.38 3.32 3.41 3.35 3.23 3.25 3.18	102 104 113 117 115 118 116 112 113 110	Building	0 50 100 150 200 250 300 350 400 450	50592 50804 45646 56495 50321 50549 50589 50554 50582 50612	2.83 3.00 3.14 3.34 3.27 3.13 3.12 3.06 3.18 3.12	98 104 109 114 109 106 108 106 109 108	Building Building
	Site 1 Line 6				_	Site 1 Line 7			
0 50 100 150 200 250 300 350 400 450 500	50582 50564 50460 50577 50625 50810 49471 50650 50652 50645	2.73 2.45 2.84 3.22 3.31 3.61 3.39 3.39 3.35 3.27	95 85 99 112 115 125 118 118 116 114	Bui 1ding	0 50 100 150 200 250 300 350 400 450 500	50630 50618 -50639 50646 50561 50582 50680 50671 50777 50576 50672	2.88 2.53 2.97 3.06 2.93 3.24 3.24 2.85 3.06 3.35 3.30	100 88 103 106 102 113 113 99 106 116	
	Site 1 Line 8					Site i Line 9			
0 50 100 150 200 250 300 350 400 450 500	50618 50869 50475 50426 50646 50637 50602 50678 50638 50603	2.57 2.91 3.13 3.22 3.26 3.36 3.40 3.15 3.42 3.41	89 101 109 112 113 118 109 119	Building	0 50 100 150 200 250 300 350 400 450	50797 51016 50650 50680 50678 50576 50604 50575 50644 50652 50657	2.88 2.63 3.20 3.25 3.19 3.26 3.37 3.32 3.21 3.35 3.30	100 91 111 113 117 115 111 116 115	

Station (Feet)	Site 1 Line 10 MAG (Gammas)	YLF (Au)	VLF % Chg.		Station (Feet)	Site 1 Line 11 MAG (Gammas)	VLF (Au)	VLF % Chg.	Comments
0 50 100 150 200 250 300 350 400 450 500	50802 50631 50637 50542 50677 49529 50656 50622 50495 50667 50657	3.14 3.10 3.02 3.19 3.13 3.27 3.37 3.29 3.18 3.23 3.26	113 113 109 117 113 120 124 120 117 117	Building	0 50 100 150 200 250 300 350 400 450 500	50679 50533 50651 50658 50495 50669 50670 50741 50656 50651	2.82 2.96 3.10 3.03 3.13 3.05 3.22 3.18 3.25 3.17 3.10	98 103 108 105 109 106 112 110 113 110	
	Site 1 Line 12					Site 1 Line 13			
0 50 100 150 200 250 300 350 400 450	51407 50625 50640 50649 50638 50652 50637 50698 50724 50652 50678	2.89 3.11 3.12 3.09 2.90 3.13 3.22 3.11 3.10 3.09 3.11	100 108 108 107 101 109 112 108 108 107 108		0 50 100 150 200 250 300 350 400 450 500	50707 50121 50639 50623 50626 50399 50522 50495 50690 50645 50657	2.96 1.89 2.93 2.90 3.00 3.00 3.28 3.05 3.02 3.02	103 100 102 101 104 104 106 105 105	
	Site 1 Line 14					Site 1 Line 15			
0 50 100 150 200 250 300 350 400 450 500	50583 50349 50599 50598 50550 44317 50776 50647 50649 50637 50644 50644	2.85 2.85 2.88 3.03 2.99 5.78 3.18 3.42 2.95 3.07 3.02 3.06	99 99 100 105 104 201 110 119 106 107 105 106	Building	0 50 100 150 200 250 300 350 400 450 500	50567 50602 50323 50451 50397 50525 50560 51310 50664 50639 50639	2.02 2.22 2.25 2.93 2.77 4.67 2.27 2.81 2.88 2.06 2.92 3.02	83 92 93 121 114 193 94 116 119 85 120	Water Line
	Site 1 Line 16			•		Site 1 Line 17			
0 50 100 150 200 250 300 350 400 450 500	50561 50582 49732 49705 52263 50534 50573 50650 50651 50464 50660	2.19 2.07 1.95 1.90 1.82 3.76 2.14 1.99 2.20 2.24 2.30	101 96 90 88 84 173 99 92 102 103 106	Building Building Building Water Line	0 50 100 150 200 250 300 350 400 450 500	50570 50350 50590 50532 50581 50337 50482 50652 50616 50643 50644	2.05 1.93 2.00 2.01 1.85 3.79 2.04 2.15 2.15 2.18 2.24 2.26	95 89 92 93 85 175 94 99 101 103 104	Water Line
	Site 1 Line 18					Site 1 Line 19			
0 50 100 150 200 250 300 350 400 450 500 550	50568 50590 50569 50604 51006 50884 50824 50467 50619 50617 50184 50630	2.14 2.00 2.06 2.00 1.89 3.33 2.07 2.08 2.18 2.22 2.30 2.32	99 92 95 92 87 154 96 96 101 102	Water Line	0 50 100 150 200 250 300 350 400 450	50580 50605 50610 50597 50603 50570 50622 50576 50664 50576 49864	2.29 2.16 2.16 2.08 1.95 3.81 2.06 2.18 2.29 2.35 2.40	106 100 100 96 90 142 95 101 106 108	Water Line Steel Pipe

Station (Feet)	Site 1 Line 20 HAG (Gammas)	VLF (Au)	VLF % Chg.		tation Feet)	Site 1 Line 21 MAG (Gammas)	VLF (Au)	YLF % Cha.	Comments
0 50 100 150 250 250 300 350 400 450 500	50651 50864 50675 50632 50652 50686 50773 50549 50657 50493 49692 50815 50595	2.30 2.23 2.17 2.26 2.10 4.41 2.88 3.10 3.34 3.34 3.32 3.52	87 64 82 86 80 165 109 117 127 130 126 135	Water Line Steel Pipe	0 50 100 150 200 250 300 350 400 450 550 600	50644 50636 50632 50653 50638 50631 50766 50356 49205 49802 50426 51117 50686	2.98 3.04 3.16 3.07 2.96 4.15 3.04 3.38 3.65 3.51 3.63 3.56	113 115 120 111 112 157 115 128 138 132 138 140 135	Water Line Building Building Building Building Building
	Site 1 Line 22					Site 1 Line 23			
0 50 100 150 200 250 300	50642 50632 50637 50670 50677 50636 50732	2.84 2.72 2.82 2.42 3.19 1.96	100 100 95 99 85 117 69	Water Line	0 50 100 150 200 250 300	50583 50590 50844 50644 50659 50671 50583	1.9 1.9 1.8 1.8 3.0 2.0	100 103 104 98 96 100 109	Water Line
	Site 2 Line 0		_			Site 2 Line 1			
0 50 100 150 200 250 300 450 500 550 600 650 700	50548 50652 50661 50667 50596 50653 50653 50654 50584 50564 5057 50692 50674 50686 50686	5.48 5.63 5.66 5.72 5.79 5.83 6.02 6.01 6.01 6.05 6.15 5.95 6.00	94 97 98 99 100 101 101 104 105 104 106 103 102 103		0 100 150 250 350 450 550 650 750 800	50617 50666 50686 50680 50623 50554 51844 51174 51522 50708 50693 50694 50688 50688 50688 50638	6.36 6.39 6.33 6.27 6.21 6.30 6.24 6.46 6.53 6.27 6.51 6.11 6.20 6.17	102 101 101 100 99 101 102 100 103 105 105 99 98 99	
	Site 2 Line 2					Site 2 Line 3			
0 50 100 150 200 250 300 350 400 450 500 650 650 750 800	50685 50769 50645 50702 51611 50116 45142 50783 50970 51373 507760 50836 50694 50652 50653 50686	6.50 6.37 6.42 6.52 6.38 6.51 7.14 7.28 6.63 7.03 6.86 6.62 6.60 6.64 6.57 6.76	98 96 97 99 98 108 116 100 106 100 100 99		0 50 100 150 200 250 300 350 400 450 550 650 750 800	50696 50755 50437 50664 49536 45640 51311 50617 50464 50515 50679 51366 50873 50610 50548 50213	6.91 6.80 6.70 6.71 7.09 7.32 7.27 7.08 6.53 6.64 6.65 6.20 6.72 6.87 6.75	100 98 97 97 102 106 104 105 102 99 96 94 90 97 99 98	

Station (Feet)	Site 2 Line 4 MAG (Gammas)	VLF (Au)	VLF % Chg.	Comments	Station (Feet)	Site 2 Line 5 MAG (Gammas)	VLF (Au)	VLF % Chg.	Comments
0 50 100	50701 51056 50699	7.05 6.97 6.87	102 101 99	_	0 50 100	50757 52573 51220	7.34 7.53 7.71	101 103 106	
150 200	51208 49226	7.28 7.61	105 110		150 200	51830 50556	7.50 7.47	103 103	
250	50412	7.37	106		250	50200	7.61	105	
300 350	50164 50404	7.10 7.06	103 102		300 350	50206 50103	7.49 7.34	103 101	
400 450	50206 50728	7.00 6.89	101 100		400 450	50433 50557	7.21 7.08	99 97	
500 550	50699 51298	6.91 7.00	100		500	50701	7.23	99	
600	50598	6.69	101 97		550 6 0 0	50747 50392	7.12 7.15	98 98	
650 700	50803 50651	6.67 6.89	96 100		650 700	50639 50762	7.10 7.00	98 96	
750 800	50603 50638	7.01 6.95	101 100		750 800	50584 50747	7.28 7.38	106 101	
•		0.33	100		800		7.30	101	
	Site 2 Line 6					Site 2 Line 7			
0 50	50736 50364	7.33 7.59	101 104		0 50	50673 50629	7.41 7.38	102 101	
100	50432	7.48	103		100	50597	7.28	100	
150 200	50502 50590	7.52 7.63	103 105		150 200	50551 50501	7.27 7.05	100 97	
250 300	50590 50706	7.58 7.53	104 103		250 300	50651 50379	7.26 7.48	100 103	
350 400	51045 50659	7.41 6.94	102 95		350 400	51315 49843	6.95 7.14	96 98	
450	50638	7.27	100		450	49953	7.46	103	
500 550	50583 50653	7.28 7.36	100 101		500 550	50966 51023	7.36 7.37	101 101	
600 650	50384 50636	7.48 7.47	103 103		600 650	50021 50714	7.47 7.25	103 100	
700	50657	7.39	102		700	50687	7.10	98	
750 800	50622 50698	7.52 7.34	103 101		750	50527	7.38	101	
	Site 2					Site 2			
	Line 8					Line 9			
0 50	50660 50646	7.13 7.34	98 101		0 50	50666 50637	7.38 7.20	101 99	
100	50651	7.20	99		100	50664	7.33	101	
150 200	50622 50630	7.18 7.40	99 102		150 200	50671 50659	7.35 7.34	101 101	
250 300	50632 50619	7.25 7.38	100 101		250 300	50639 50658	7.25 7.28	100 100	
350	50601	7.35	101		350	50709	7.23	99	
400 450	50589 50412	7.28 7.28	100 100		400 450	59644 50706	7.08 7.08	97 97	
500 550	50708 51297	7.33 7.33	101 101		500 550	50639 50604	7.06 7.06	97 97	
600 650	50515	7.30 7.33	101 101		600 650	50720	6.98	96 97	
700	50850 51468	8.04	111	On Dump	700	50709 50855	7.04 7.02	96	
	Site 2					Site 2			
	Line 10	£ 0F	ne ne			Line 11	6 00	102	
0 50	50657 50609	6.95 7.04	96 97		0 50	50645 50642	6.99 7.10	103 105	
100 150	50649 50658	7.02 7.10	97 98		100 150	50645 50666	6.93 7.09	102 105	
200	50659	7.17	99		200	50667	7.00	103	
250 300	50669 50636	7.15 7.02	98 96		250 300	50693 50650	7.10 7.06	105 104	
350 400	50660 50671	7.03 7.01	97 96		350 400	50680 50671	6.91 6.67	102 99	
450	50636	7.02	96		450	50809	6.79	100	
500 550	50762 50784	6.76 6.79	93 93		500 550	50693 50652	6.77 6.67	100 99	
600 650	50609 50700	6.98 7.02	96 96		600 650	50783 50756	6.40 6.55	94 97	

Station (Feet)	Site 2 Line 12 MAG (Gammas)	VLF (Au)	VLF % Chg.	Comments	Station (Feet)	MAG (Gazznas)	VLF (Au)	VLF % Chg.	Comments
0 50 100 150 200 250 300 350	50618 50569 50666 50694 50650 50692 50659 50687	6.23 6.52 6.76 6.85 6.68 6.63 6.79 6.53	96 100 104 105 103 102 104 100						
400 450 500 550 600 650	50671 56665 50658 50639 50659 50678	6.57 6.60 6.61 6.68 6.73 6.58	101 101 102 103 103 101						
	Site 3 Line 0					Site 3 Line 1			
0 50 100 150 200 250 300	50679 50252 50645 50555 50700 50638 50666	7.26 7.34 7.52 7.72 7.67 7.61 7.55	99 100 102 105 105 104 103		0 50 100 150 200 250 300	50166 50699 50651 50666 50680 50645 50623	7.25 7.43 7.49 7.60 7.70 7.30 7.29	99 101 102 104 105 99 99	
	Site 3 Line 2		_			Site 3 Line 3			
0 50 100 150 200 250 300	50433 50652 50618 50638 50679 50660 50652	7.42 7.52 7.44 7.67 7.65 7.47 7.48	103 104 103 106 106 103 103		0 50 100 150 200 250 300	50692 50845 51415 50650 50651	7.13 7.29 7.53 7.53 7.40	99 101 104 104 102 	Off Scale Off Scale
	Site 3 Line 4					Site 3 Line 5			
0 50 100 150 200 250 300	50721 51044 50585 49972 50528 50651 50666	7.11 7.13 7.49 7.60 7.53 7.40 7.60	99 99 104 105 104 102 105		0 50 100 150 200 250 300	50700 50913 49574 50315 50644 50652 50617	7.08 7.09 7.55 7.47 7.39 7.45 7.37	98 98 104 103 102 103 102	
	Site 3 Line 6					Site 3 Line 7			
0 50 100 150 200 250 300	50691 51373 50736 50433 50636 50687 50699	7.09 7.24 7.53 7.76 7.31 7.35 7.26	100 102 106 109 103 103 102		0 50 100 150 200 250 300	50687 51921 50512 49721 50721 50611 50665	6.81 7.02 7.24 7.73 7.28 7.32 7.32	96 99 102 109 102 103 103	
	Site 3 Line 8			_		Site 3 Line 9			
0 100 150 200 250 300 350	50721 52594 51371 49917 50769 50562 50678 50678	6.80 7.24 7.40 7.32 7.15 7.05 6.94 6.87	99 106 108 107 105 103 102		0 50 100 150 200 250 300 350	50720 50864 51212 49834 50618 50664 50678 50659	6.72 6.95 7.09 7.14 6.91 6.99 6.90 6.79	99 102 104 105 102 103 101 100	

Station (Feet)	Site 3 Line 10 MAG (Gammas)	VLF (Au)	VLF % Chg.	Comments	Station (Feet)	Site 3 Line 11 MAG (Gammas)	VLF (Au)	VLF % Chg.	Comments
0 50 100 150 200 250 300 350	50705 50625 49759 50691 50625 50671 50749 50659	6.58 6.91 6.84 6.69 6.25 6.22 6.17	104 109 108 106 99 98 98		0 50 100 150 200 250 300 350	50699 50061 50267 50007 50575 50671 50671 50246	6.13 6.41 6.44 6.30 6.03 6.04 6.01	100 104 105 102 98 98 98	
	Site 3 Line 12		_			Site 3 Line 13			
0 50 100 150 200 250 300 350	50609 49432 50674 50521 50220 50693 50891 50836	5.85 6.09 5.99 5.42 5.27 5.37 5.30 5.18	111 115 113 103 100 102 98 98		0 50 100 150 200 250 300 350	50337 50617 50746 50574 50725 50666 50670 50672	5.15 5.03 5.27 4.96 4.90 5.02 5.02 4.98	97 95 100 94 93 95 95	
	Site 4 Line 0					Site 4 Line 1	_		
0 50	50632 50592	30.5 29.5	104 100		0 50 100	50652 50591 50411	32.5 32.3 30.6	111 110 104	
	Site 4 Line 2					Site 4 Line 3			
0 50 100 150	50672 50487 50501 50370	32.7 33.1 32.0 29.6	111 113 109 101		0 50 100 150 200	50886 51896 49425 50316 50334	32.4 35.5 34.7 29.7 29.1	110 121 118 101 99	
	Site 4 Line 4					Site 4 Line 5			
0 50 100 150 200 250	51042 49836 50497 50584 50431 50445	31.6 36.0 37.1 41.2 29.6 28.3	108 123 126 140 101 96		0 50 100 150 200 250 300	51434 49521 49563 52293 43644 50502 50659	32.4 32.9 31.7 40.0 39.1 26.9 27.7	110 112 108 136 133 92 94	
	Site 4 Line 6					Site 4 Line 7			
0 50 100 150 200 250 300 350	51520 49839 50397 51371 44267 50625 49951 50644	24.3 32.2 32.6 35.7 37.2 32.1 28.5 27.1	100 110 111 122 107 111 97		0 50 100 150 200 250 300 350 400	51317 51916 49937 50397 50659 51909 44129 50664 50664	30.1 33.3 32.5 35.6 40.2 40.0 38.7 30.2 28.9	102 113 111 121 137 136 132 103 98	
	Site 4 Line 8					Site 4 Line 9			
0 50 100 150 200 250 300 350 400 450	51965 49993 50551 50336 51242 51172 49714 50364 51138 49931	30.4 30.5 32.2 32.7 33.0 36.0 36.2 35.9 32.0 29.4	103 104 110 111 112 123 123 122 109 100		0 50 100 150 200 250 300 350 400 450	50947 52058 49656 50445 50418 50485 51021 50221 50362 49772	29.2 29.9 30.3 30.3 31.0 31.6 33.3 40.0 43.7 33.4	99 102 103 103 106 108 113 131 148 114	

Station	Site 4 Line 10 MAG	VLF	VLF		Lir Station	te 4 ne 11 MAG	VLF .	VLF	
(Feet)	(Gammas)		Chg.	Comments	(Feet)	(Gammas)	(Au)	Chg.	Comments
0 50	50791 50846	29.4 29.7	113 114		0 50	50798 50782	33.1 39.9	113 136	
100	50458	30.2	116		100	50706	42.1	100	
150 200	50596 50543	30.3 30.2	117 116		150 200	50246 49816	42.0 33.2	143 113	
250	50591	30.7	118		250	49512	31.9	109	
300	50548	29.9	115		300	50953	31.9	109	
350 400	50850 51500	31.3 30.6	120 118		350 400	51236 49781	33.8 35.6	115 121	
450	52242	45.6	175		450	45597	32.9	112	
500 550	49177 49240	36.0 29.7	138 114		500 550	51893 45549	36.6 31.3	125 107	
600	50482	27.9	107		600	50493	32.9	112	
					650	50729	30.8	105	
	Site 4					Site 4			
	Line 12					Line 13			
0 50	50557 50618	28.3 27.6	96 94		250 300	51015 52364	21.4 26.5	73 90	
100	50665	27.B 27.8	9 4 95		350 350	52364 5 0485	27.1	90 92	
150	50150	27.6	94				•	_	
200 250	45489 50968	19.1 27.0	65 92						
300	51288	28.7	98						
350 400	49754 45193	32.0 30.5	109 104						
450	51440	36.1	123						
	Site 4 Line 14					Site 4 Line 15			
350 400	45337 50506	26.9 28.0	92 95		350 400	50603 50941	23.9 28.4	81 97	
400	30300	20.0	33		400	30341	20.4	3/	
	Site 5					Site 5			
	Line O					Line 1			
800	50643	3.30	96		550	50671	3.41	99	
850	50665	3.45	100		600 650	50656	3.40	98 100	
					700	50712 50678	3.44 3.42	99	
					750	50678	3.47	100	
					800 850	50671 50885	3.52 3.65	102 100	
	Site 5 Line 2					Site 5 Line 3			
		2 20	00		400		2 17		
500 550	50678 50669	3.38 3.41	98 99		400 450	50705 50677	3.17 3.23	92 93	
600	50669	3.44	100		500	50707	3.33	96	
650 700	50663 50677	3.39 3.55	98 103		550 600	50502 50575	3. <i>2</i> 6 3.30	94 96	
750	50664	3.43	99		650	50432	3.26	94	
800	50686	3.54	103		700	50797	3.35	97	
850	50687	3.57	99		750 800	50323 50698	3.22 3.23	93 93	
					850	50666	3.22	93	
	Site 5					Site 5			
-	Line 4	_			_	Line 5			
300	50642	3.04	88		250	50643	3.28	95 06	
350 400	50610 50671	3.33 3.33	96 96		300 350	50684 50714	3.31 3.50	96 101	
450	50630	3.29	95		400	50412	3.35	97	
500 550	50667 50665	3.18 3.23	92 93		450 500	50843 50693	3.41 3.41	99 99	
600	50664	3.22	93		550	50597	3.42	99	
650 700	50671 50692	3.19 3.23	92 95		600 650	50693 50732	3.38 3.38	98 98	
750 750	50692 50692	3.29	95 95		700	50732 50645	3.49	101	
800	50669	3.28	96		750	50685	3.58	104	
850	50665	3.27	95		800 850	50697 50651	3.57 3.57	103 103	

Station (Feet) 150 200 250 300 350 400 450 500 650 700 750 800 850	Site 5 Line 6 MAG (Gammas) 50638 51040 51014 50322 50560 50787 50572 50672 50672 50672 50673	VLF (Au) 2.69 2.86 2.98 2.98 2.96 2.88 2.90 3.06 2.89 2.95 3.11 3.03	VLF % Chg. 88 93 95 97 97 93 97 95 100 94 96 96 102 99	Comments	Station (Feet) 50 100 150 200 250 300 350 400 450 500 650 700 750 800 850	Site 5 Line 7 MAG (Gammas) 50597 50611 50769 50727 50560 50419 51001 50433 49802 44808 50690 50690 50690 50693 50680 50679 50444 50646	VLF (Au) 2.79 3.12 3.32 3.37 3.26 3.37 3.16 3.19 3.08 3.03 3.09 3.11 2.93 3.09	VLF % Chg. 86 97 101 103 104 100 101 104 98 99 95 94 96 96 91	Comments
	Site 5 Line 8					Site 5 Line 9			
0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 880 850	50657 50902 50952 51480 50157 50611 50851 50787 52122 50294 50597 50679 50679 50679 50679 50679 50575 50575	3.08 3.29 3.42 3.50 3.42 3.34 3.28 3.41 3.28 3.23 3.23 3.23 3.23 3.23 3.23	95 102 106 108 106 103 105 106 102 101 100 99 100 100 104 102 101		50 100 150 250 250 350 450 450 500 550 650 700 750 850	52085 51195 50316 50796 50203 50679 51042 50342 51337 50576 50619 50680 50680 50691	3.14 3.31 3.26 3.29 3.30 3.27 3.26 3.31 3.25 3.29 3.18 3.27 3.27 3.24 3.39	90 96 96 96 96 96 96 96 93 96 93	Bull Dozer Ramp
	Site 5 Line 10					Site 5 Line 11			
0 50 100 150 200 250 300 350 400 450 500 650 700 750 800 850	51016 50650 50612 50570 51074 50465 50598 50516 50581 50714 50613 50666 50678 50680 50775 50684	3.21 3.24 3.20 3.27 3.13 3.23 3.20 3.24 3.11 3.23 3.30 3.33 3.30 3.33 3.30 3.31	99 100 99 101 97 101 102 100 99 100 100 100 103 103 103 99		0 50 100 150 200 250 300 350 400 450 500 650 700 750 800 850	50897 50513 51522 51105 50638 50362 50878 50622 50829 50911 50041 50193 50594 50691 50687 50687 50659 50645	3.08 3.13 3.09 3.11 3.04 3.14 3.13 3.25 3.20 3.24 3.25 3.25 3.25 3.29 3.29 3.23 3.20	95 97 96 96 99 97 97 98 101 101 101 102 102 100 99	

Station (Feet)	Site 5 Line 12 /4AG (Gammas)	VLF (Au)	VLF % Chọ.	Comments	Station (Feet)	Site 5 Line 13 MAG (Gammas)	YLF (Au)	VLF % Chg.	Comments
0	50673	3.08	95		0	51075	3.03	94	
50	50343	3.11	96		50	51192	3.04	94	
100	51213	3.11	96		100	50013	3.03	94	
150 200	50582 49355	3.05 3.08	94 95		150 2 0 0	50921 50525	3.50 3.16	94 98	
250	50475	3.09	96		250	50405	3.17	98	
300	50424	3.18	98		300	50725	3.13	97	
350	50637	3, 14	97		350	50646	3.20	99	
400 450	50740 50448	3.20 3.23	99 100		400 450	50834 50540	3.20 3.21	99 99	
500	50667	3.09	96		500	50687	3.26	101	
550	50310	3.24	100		550	50342	3.19	99	
600	50255	3.11	96		600	50617	3.13	97	
650 700	50625 50622	3.24 3.21	100 99		650 7 0 0	50604 50632	3.27 3.18	101 98	
750 750	50616	3.28	162		750	50150	3.18	98	
800	50602	3.18	98		800	50581	3.19	99	
850	50632	3.22	100		850	50617	3.22	100	
	Site 5					Site 5			
	Line 14					Line 15			
0	50667	3.00	84		0	50644	3.43	95	
50	50733	2.96	83		50	50630	3.40	94	
100	51233	2.98	84		100	50597	3.44	96	
150 200	50076 50218	3.05	86		150 200	50659	ა.50 3.57	97 99	
250 250	50303	3.05 3.19	86 90		250 250	50495 50673	3.58	99 99	
300	50718	3.24	91		300	50602	3.55	99	
350	50740	3.24	91		350	50678	3.60	100	
400 450	50761 50466	3.30 3.34	93 94		400 450	50649 50315	3.61 3.53	100 98	
500	50165	3.38	95		. 500	50598	3.52	98	
550	50563	3.33	94		550	50989	3.52	98	
600	50609	3.42	96		600	50609	3.58	99	
650 700	50629 50618	3.45 3.52	97 9 9		650 700	50605 50610	3.58 3.57	99 99	
750	50625	3.49	98		750	50657	3.42	96	
800	50612	3.53	99		800	50612	3.59	100	
850	50610	3.56	100		850	50610	3.56	99	
	Site 5 Line 16					Site 5 Line 17		_	
0	50630	3.35	93		0	50595	3.48	97	
50	50617	3.34	93		50	50687	3.42	95	
100	50967	3.41	95		100	50618	3.45	96	
150 200	50505 50575	3.47 3.53	96 98		150 200	50556 50473	3.56 3.50	99 97	
250	50619	3.53	98		250	50562	3.55	99	
300	50639	3.54	98		300	50609	3.60	100	
350	50672	3.49	97		350	50602	3.53	98	
400 450	50554 50622	3.43 3.46	95 96		400 450	50597 5 0598	3.54 3.42	98 95	
500	50582	3.45	96		500	50590 50590	3.51	93 98	
550	50617	3.45	96		550	50590	3,51	98	
600	50612	3.48	97		600	50645	3,50	97	
650 700	50619 50605	3.54 3.50	98 97		650 700	50611 50629	3.50 3.52	98 98	
750 750	50624	3.54	97 98		750 750	50610	3.53	97	
800	50622	3.44	96		800	50612	3.49	97	
850	50618	3.50	97		850	50618	3.56	99	

Station (Feet)	Site 5 Line 18 HAG (Gammas)	VLF (Au)	VLF 2 Cho.	Comments	Station (Feet)	Site 5 Line 19 MAG (Gammas)	VLF (Au)	VLF % Chọ.	Comments
0	50609	3.46	96		0	50673	3.44	99	
50	50592	3.48	97		50	50642	3.58	99	
100	50639	3.50	97		100	50623	3.70	103	
150 200	50582 50597	3.59 3.50	100 97		150 200	50577 50619	3.71 3.73	103 104	
250	50597	3.51	98		250	50597	3,73	104	
300	50589	3,55	99		300	50637	3.64	101	
350 4 0 0	50617	3.57	99		350	50597	3.50	97	
450	50575 50554	3.55 3.58	99 99		400 450	50637 50632	3.73 3.60	104 100	
500	50576	3.57	99		500	50619	3.67	102	
550	50598	3,49	97		550	50562	3.64	101	
600 650	50585 50581	3.59 3.65	100 101		600 650	50617 50576	3.71 3.65	103 101	
700	50582	3.66	102		700	50645	3.69	102	
750	50630	3.56	99		750	50639	3.63	101	
800 850	50591 59609	3.64 3.73	101 104		800 850	50556 50577	3.46	96	
0.50	33003	3.73	104		830	30377	3.65	101	
	Site 6 Line 0					Site 6 Line 1			
0 50	50611 50505	5.02 4.76	86 82		0 50	49493 50599	5.98 5.54	103 95	
100	50503	4.98	85		100	50430	5.26	90	
150	50604	5.01	86		150	49940	5.30	91	Building
200 250	50575 50501	5.06 4.99	87 86		200 250	49726 50666	5.56 5.48	95 94	Building
230	30301	4,33	00		250	30000	3.40	34	
	Site 6 Line 2					Site 6 Line 3			
0	50664	4.98	86		. 0	50584	4.19	72	
50	50407	4.84	83		50	50561	4.22	72	
100	50591	4.79	82		100	51015	4.35	75	
150 200	49534 496 64	4.21 5.24	72 90	Building Building	150 200	49684 49602	4.44 4.12	76 71	Building Building
250	50506	6.14	106	our rurny	250	50616	6.72	115	building
	Site 7 Line 0					Site 7 Line 1			
					100	50587	4,04	124	
200	52484	3,61	111	Metal Debri		50479	4.04	124	
300	50811	3.74	115		300	50527	3.94	121	
400 500	50609	3.61	111		400	50720 5067u	3.83	117	
300	50712	2.99	92		500	50070	3.46	106	
	Site 7					Site 7			
	Line 2					Line 3			
0	50062	4.51	138	Hetal Debri		52661	4.41		Metal Debris
100	50611 50879	4,14	127		200 300	50815 51153	4.57 4.46	138	Metal Debris
200 300	50579 50542	4.22	129 127		400	50680	4.48	136	recal VEDEIS
400	50417	3.93	121		500	50767	4.31	132	
500	50732	1.93	59						
	Site 7 Line 4								
200	50604	3.46	106						
300	50550	3.35	103						
400	50576	3.24	99						
500	49692	2.99	92						

VLF Background Levels

Site	Lines	VLF Back ground	Si te	Lines	VLF Back ground
1	0-14	2.88	5	0-5	3.46
	15	2.42		6	3.06
	16-19	2.17		7.13	3.23
	20 & 21	2.64		14	3.56
	22	2.84		15-19	3.60
	23	1.86			
			6	All	4.97
2	0	5,80			
	1	6.24	7	A11	3.26
	2	6.60			
	2 3 & 4	6,92			
	5-10	7.28			
	11	6.77			
	12	6.51			
3	0 & 2	7.34			
	2-5	7.23			
	6 & 7	7.12			
	8 & 9	6.80			
	10	6.32			
	11	6,16			
	12 & 13	5.29			
4	All	25.38			

VLF Background Levels

Site	Lines	VLF Back ground	Si te_	Lines	VLF Back ground
1	0-14 15 16-19 20 & 21 22	2.88 2.42 2.17 2.64 2.84	5	0-5 6 7.13 14 15-19	3.46 3.06 3.23 3.56 3.60
	23	1.86	6	All	4.97
2	0 1 2 3 & 4 5-10 11	5.80 6.24 6.60 6.92 7.28 6.77 6.51	7	IIA	3.26
3	0 & 2 2-5 6 & 7 8 & 9 10 11 12 & 13	7.34 7.23 7.12 6.80 6.32 6.16 5.29			
4	ATT	25.38			

APPENDIX C

Logs of Boring/Monitoring Wells

DEPARTMENT OF THE NAVY

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10066 CHARLESTON S C 29411-0068

WELL DATA REPORT

WELL NUMBER GPT - 1-1 AREA 1

DATE OF INSTALLATION 3/21/87

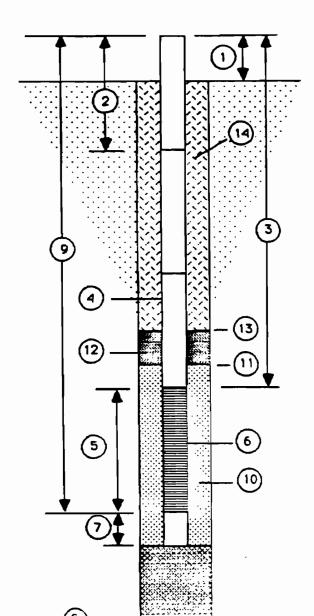
WELL HOLE DATA

Drill Date 3/21/87	Well Driller Sout	hwestern Laboratories, In	nc.
Depth of Boring 30 ft		Soil Sampling and	
Drilling Method Hollow-stem auge	rMud Type	None	
WATER LEVEL DATA (All measu	rements from top	of casing)	
Water Level 4.5 ft	Date of Measurem	ent3/23/87	
DEVELOPMENT DATA			
Development Method Pumpi	ng		
Length of Time Developed 15	minutes		
LOCATION OF BOREHOLE INFO	RMATION		
Drillers Log X	Geophysical Log		
Physical Corex	Cutting Samples_		
Water Level Observations 3.0	69' on 3/30/87		
DRILLED BYS.W. Labs	SCCW	D*	
DEVELOPED BY	5CCW)*	
TECHNICAL OVERSIGHT BY HLA			

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR. P O BOX 10068

CHARLESTON 5 C 29411-0068



WELL CONSTRUCTION DETAILS

GPT - 1-1 WELL NUMBER _

3/21/87 DATE OF INSTALLATION _

- 1. Height of Casing above ground _____2.5 ft
- 2. Depth to first Coupling 5.5 fr Coupling Interval Depths 15.5 ft, 25.5 ft
- 3. Total Length of Blank Pipe ____5.5_ft
- 4. Type of Blank Pipe ____Schedule 40 PVC
- 5. Length of Screen 27 ft
- 6. Type of Screen Schedule 40 PVC, .020 slotted
- N/A 7. Length of Sump_
- B. Total Depth of Boring $\frac{30 \text{ ft}}{}$ Hole Diameter $\frac{6 \text{ 3/4 in}}{}$
- 9. Depth To Bollom of Screen 32.5 ft
- #1 sand 10. Type of Screen Filter _ Quantity Used 600 Tbs. Size 10/20 U/C_
- 11. Depth To Top of Filter 2 ft
- 12. Type of Seal 1/2 inch bentonite pellets Quantity Used ______12 pounds
- 13. Depth To Top of Seal 1 ft_
- 14. Type of Grout ___cement-bentonite Grout Mixture ____20:1

Method of Placement _____poured

WELL AND PUMP DATA

٠.

<u>•</u>			WELL	AND PU	IMP DATA			
Location of Well GPT - 1-1					Property owner's name	and address		
County Harrison Tournship	Number Range Number	Section No. Pr	ection S	W NW	None e 15			
fiship 8	N 11 E	6		4 14 14	NCBC Gulfp		:	
	<u>Ø '' Ø</u>				Guilport,	Mississipp	1	
reet Address and City or Distance an	d Direction from Road In	tersections						
Show exact location of well in section g	and with an 'x'	Sketch n	nap of we	il location	Well depth 30 ft	1	which all measurement	ts are taken
N TOTAL TOTA					Method of Drilling	i s.rour	id_Surface_	
+ + + Additi	on Name				c 'Cable tool	Hollow rod	Driven Bucket auger	* Hollow-
					Prect rotary Reverse rotary	. Air rotary Jetted	Flight auger	stem auge
Block	Number				Use			
					Domestic trigation	Public supply Municipal	f industrial Commercial	· ;
- - - Lot!	Number				: Test Well	Heating or cooling		
S					Casing Type	readed Height	nha a (MANEX X	
1 mile					[Galv	ided surfac	above/ballowXX e_2.5 ft_	
Remarks, Elevation, Source of Data, et					SPVC FiSor	vent Drive s ided	shoe? Yes No	Hole
N 258393.57 E 404757	.81 (MS State	Plane))		2 in to3	Bft Wgt_	Ib/ft Sch No 4	0 6-3 64 to 30
Elevation 28.19 ft (N	iCVD)				in to	n wgi_	lb/ft Sch No lb/ft Sch No	m
	עופו				Intake Portion of Well .			
Borehole data	0-1	Mand	P	T =	Intake Portion of Well Screen type Sch Manufacturer Tril	ledule 40 loc	_ or open hole from	f1 to f1
Formation Log	Color	Hardness	From	To	Material PVC		Dia	
Topsoil	Brown	soft	0	0.1	FittingsThrea	t and30_ tt	SiotLength	
Silty Sand	Tan & Gry	med dense	0.1	3.5			Slot	
	<u> </u>			1	Method of installation	t andt	3101	
Silty Sand	Dk Gray	loose	3.5	4.6	Filter Pack Pearl R	iver Plant	Ī . 1	0/20
Silty Sand	Dk Brown	dense	4.6	29	Source	oured	Composition	silica
Sandy Fat Clay	Gray	soft	29		Volume used 6 5.8	acks	Depth to top of	1p <u>2 ft</u>
				1	Grout Used? CX Yes C. No	Volume used 2.	5 gal	
			-		□ Neat Cement 5	ž Bentonite		
					Method of installation	poured	t to	n
					from	t	t to	n
					Development Method Dumi	ped	Duration1	5 min _
					Dates 3/23/87	าดาค	Sand content at	ter 15 xrx 0
					Chemicals used	<u> </u>		шти
					Static Water Level	X: below _ above	grade	
						3/23/87		
					Pumping Water Level	below above gra	ice Date	
	-	-	+		After	hrs pumping at		gpm
		ļ			Specific Capacity N/A	comit: o	drawdown at	bouts
					Date			
					Pump Date installed	N/A	Type	
			+	1	Manufacturer		Model No	
		-		-	H P	Volts	Capacity Capacity No. of staces	
					ii Oil _ Water tubricatio	on Power source	<u>_</u>	
					Material of drop pipe shafting	impeliers	bowls _ Bowl dia	
		-	-	†	Column pipe dia		Modifications	
				+ -	Well Head Completion Pitless adaptor Bar		nce above drade	2.5 ft
				<u> </u>	Nearest Sources of Pos			
<u> </u>				1	Well disinfected upon col	Streetion	1,pe	
					Geophysical Logs Run		140	=
			+	+				
			ļ		_			
Contractor Name and Address		•			Water Quality			
Ì					Sample taken YET	C ^x Environme	ntal Consult	ants, Inc.
Name of Driller Southwes	tern Lab <u>orato</u>	ries, I	nc.			3/23/87		
State License Number	<u> </u>				Date well completed	J, LJ, U,		

			Specific Capacity (gpm/ft of drawdown)		
Problem	Corrective Action Taken	Date	Before	After	
				-	
				t.	
		_			
			1		
		_			
				<u> </u>	
-					
				İ	

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10056 CHARLESTON 5 C 29411-0068

WELL DATA REPORT

WELL NUMBER GPT - 1-2AREA 1

DATE OF INSTALLATION 3/21/87

Drill Date 3/21/87	Well Driller Southwestern Laboratories, Inc.	
Depth of Boring 27.5 ft	Soil Sampling and Purpose of Boring Monitoring Well Installat	ion
Drilling Method Hollow-stem a	nuger Mud Type	
WATER LEVEL DATA (All me	easurements from top of casing)	
Water Level5.0	Date of Measurement 3/22/87	
DEVELOPMENT DATA		
Development Method	pumped	
Length of Time Developed	40 minutes	
LOCATION OF BOREHOLE IN	FORMATION	
Drillers Logx	Geophysical Log	
Physical Corex	Cutting Samples	
Water Level Observations	4.17' on 3/30/87	
DRILLED BYS.W. Labs	SCCWD*	
DEVELOPED BY HLA	SCCWD*	
TECHNICAL OVERSIGHT BY	HLA	

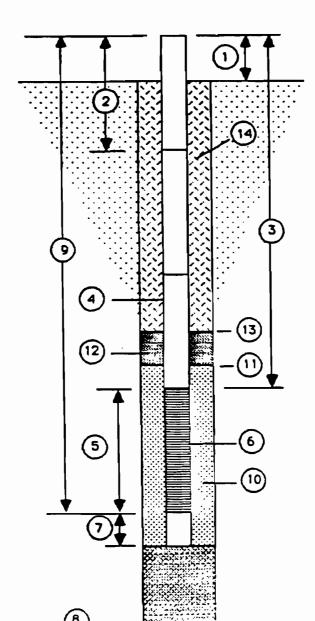
SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 8195 EAGLE DR. P. O BOX 10068 CHARLESTON 5 C 29411-0068

WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 1-2

DATE OF INSTALLATION _____3/21/87



1. Height of Casing above groun	d2.6 ft
2. Depth to first Coupling	5.6 ft
Coupling Interval Depths	15.6 ft. 25.6 ft

3.	Total Length of Blank Pipe 5.6 ft								
4.	Type of Blank Pipe	Sch. 40 PVC							
5 .	Length of Screen .	<u>24 f</u> t							
6.	Type of Screen	Sch. 40 PVC, .020 slotted							

- B. Total Depth of Boring 27.5 ft Hole Diameter 6 3/4 i
 9. Depth To Bottom of Screen 29.6 ft
- Quantity Used 500 lbs Size 10/20 U/C
- 11. Depth To Top of Filter 2 ft

7. Length of Sump $___N/A$

- 12. Type of Seal 1/2 inch bentonite pellets

 Quantity Used 12 pounds
- 13. Depth To Top of Seal $\frac{1.0 \text{ ft}}{}$
- 14. Type of Grout ______cement-bentonite

 Grout Mixture 20:1

 Method of Placement ____poured

WELL AND PUMP DATA

Location of Well GPT - 1-2					Property owner's name and address			
County Harrison Township Num	mber Range Number	Section No. Pro	sw SW	I NW	NCBC Gulfpo	ort		
narrison 8	11 2	6 -	_ "	NW N		Mississippi		
	ତା ଧ				1	7.5.		
Street Address and City or Distance and Du	westen from Road i.	kmersections		i				
Show exact location of well in section gnd w	vith an 'x'	Sketch =	nap of well	location			ich all measurements a	ire taken
N		, #L			27 ft		d Surtace	
Addition N	iame			i	Method of Drilling Capic tool		. Driven	. Dug
				i		. Air rotary Jeffed	Bucket auger Flight auger	stem auge
Block Nun	mber			i	Use		 	uuge
				i	Domestic trigation	Manicipal	: Industrial Commercia	-
Lot Numi				i	: Test Well		X Monitoring	
S 1 mile				v i	Cesing Type [:Steel StThree	aded Height ab-	oxe/below	1
					E1Galv ☐ Weld XPVC ☐ Solve	ded surface vent Drive shoe	2.6 ft e? Yes No	Hole
Remarks, Elevation, Source of Data, etc.					! :SS weld	ped	e? Yes No tb/ff	diameter
N 258384.31 E 405230.9		e Plane))	1	in to	ft Wgt	_ lb/ft Sch No	in to
Elevation 29.40 ft (NGV	(U)				in 10	!: Wgt	tb/ft	in to
Borehole data					Intake Portion of Well Screen type Schedt Manufacturer Trilog	ule 40	or open hale from	_tr tofi
Formation Log	Color	Hardness	From	To	- MaterialVL		63	Inches
Sandy Lean Clay	Gray	stiff	0	4	Fittings threat	ded	Lencin 24 1020	ft
Clayey Sand	Gray	med dense	4	5	n	and ft Ski	ilot	
Sand	Brown	med dns to dens	9	27	Method of installation			
				+	Fitter Pack Pear 1 R	iver Plant T	. Gradation 10/2	20
Sandy Fat Clay	Gray	soft	27	 	Method of installation DO Volume used	oured	Composition Composition Depth to top of fig.	_silica
	+	+	-	 	Volume used	ks	Depth to top of fip	
		 	-		Used? :x Yes L. No	Bentonite		
					Method of installation	poured		
					Depth from	tt 10 .		tt
•		T	 	 	Development Method pumper		2 /10	min
	+	 	†	†	Dates <u>3/22/87</u>	DODO	Duration 40 Sand content after	15xx 0
	+	 	+	 	Chemicals used Static Water Level			mTII
	 	 	+	-		Xi below □ above gra.	1 de	
			<u></u>		Date measured - Pumping Water Level			
		<u></u>			N/Atiti		Date	
,					Specific Capacity	hrs pumping at		gpm
	 	 ,	 ,	Τ		gpm;t: of ar	rawdown at	nours
	+	+	†	+	B	Δ		
	+	+	+	+	Date installed N/A		Mone: No	
	+	 •	-		Depth of pump intake setti	Volts	Capacity	
		<u></u>	<u></u> '		Depth of pump intake setti	n Power source	—— No of stages —	
					Material of drop pipe	mnelicis Ra	bowis	
	T	 			Columni pipe dia	Lengir	_ Modifications	
	 	 ,	+	 	Well Head Completion Pitless adaptor Base	sement offset Distance	ален этапе2.5	ft
	+	+	+	+	Nearest Sources of Poss	sible Contamination		
		+			Well disinfected upon com	ipletion? Yes N	*-;*	
		<u></u>			Geophysical Logs Run			
					1			
		 	1		No			
tor Name and Address			1		Water Quality			
→				i	Sample favor 1 X Yes UT	TC Environmo	ntal Consul+	ants. Inc
				i			20113011	
Name of Driller Southwestern	Laboratori	es. Inc		 ۱		* 10°		
State License Number					Date well completed	3/22/87		

			Specific Capacit (gpm/ft of drawdo		
Problem	Corrective Action Taken	Date	Before	After	
					
					

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2195 EAGLE DR P O BOX 10068 CHARLESTON, S C 29411-0068

WELL DATA REPORT

WELL NUMBER GPT - 1-3AREA 1

DATE OF INSTALLATION 3/21/87

Drill Date	Well Driller Southwestern Laboratories, Inc.
Depth of Boring 28 ft	Purpose of Boring Monitoring Well Installation
Drilling Method Hollow-stem auger	Mud Type None
WATER LEVEL DATA (All measu	urements from top of casing)
Water Level 3.6 ft	Date of Measurement 3/22/87
DEVELOPMENT DATA	
Development Method Pumped	
Length of Time Developed	40 minutes
LOCATION OF BOREHOLE INFO	RMATION
Drillers Logx	Geophysical Log
Physical Corex	Cutting Samples
Water Level Observations 3.3	2' on 3/30/87
DRILLED BY S.W. Labs	SCCWD*
DEVELOPED BY HLA	SCCWD#
TECHNICAL OVERSIGHT BY HLA	

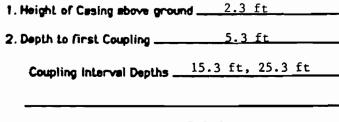
SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR. P. D. BOX 10068 CHARLESTON S. C. 29411-0068

WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 1-3

DATE OF INSTALLATION 3/21/87



3.	Total	Length	of	Blank	Pipe	5.3	ft
v.		Fei-Mni	v	DIME			_

- 4. Type of Blank Pipe Schedule 40 PVC
- 5. Length of Screen 23 ft
- 6. Type of Screen Schedule 40 PVC, .020 slotted
- 7. Length of Sump N/A
- 8. Total Depth of Boring 28 ft Hole Diameter 6-3/4 in
- 9. Depth To Boltom of Screen 28.3 ft

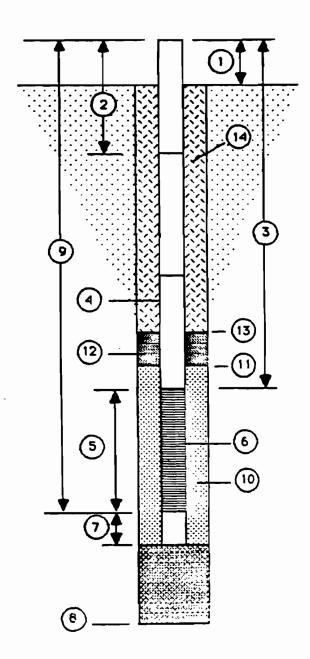
10. Type of Screen Filter _	#1 sand	
Quantity Used550_1	hs Size 10/20 U/C	

- 11. Depth To Top of Filter 1.5 ft
- 12. Type of Seal 1/2 inch bentonite pellets

 Quantity Used 12 pounds
- 13. Depth To Top of Seal 0.5 ft
- 14. Type of Grout _____cement-bentonite

 Grout Mixture ____20:1

 Method of Placement __poured



COMMENTS ON INSTALLATION

WELL AND PUMP DATA

, , , , , , , , , , , , , , , , , , ,			***	.,,,,,,,	Property owner's name and address
Location of Well GPT - 1-3					Property during a name and address
County Harrison Township Numb	Per Range Number E	Section No. Pri	ST	NW V	
Towliship 8	9 11 9	6		W W	NCBC Gulfport
	<u> </u>		_		Gulfport, Mississippi
et Address and City or Distance and Dire	ection from Road In	tersections			
Show exact location of well in section grid w	<u> </u>	Chatch =	ap of well	loonton	Well depth Datum point from which all measurements are taken
1	m en 'x	Sasten m	ap or wen	IOCEDON	26 ft Ground Surface
N Addreson Na	ma				Method of Drilling
					Cable tool Hollow rod Driven Dug Direct rotary Air rotary Bucket auger : x Hollow
					. Roverse rolary Jetted Flight auger stem auge
Block Num	Def				Use
					Domestic Public supply Findustrial Figure Municipal Commercia
Lot Numb	er				: Test Well
S					Casing Type [: Steel Si Threaded Height above 75 75 75 75 75 75 75 75 75 75 75 75 75
1 mile					[1Gaty DWelded surface 2.3 IT
Remarks, Elevation, Source of Data, etc.					XI PVC El Solvent Drive shoe? Yes No Hole chameter on chameter on
	(40 05-5-	D1 \			2 in to 3 ft Wat tb/ft Sch No 40 6-3 h4 to 28
N 258910.22 E 405025.66	(MS State	riane)			
Elevation 27.28 ft (NGVI))				Intake Portion of Well
Borehole data					Screen type <u>Schedule 40</u> or open hole from ft to ft
Formation Log	Color	Hardness	From	To	Manufacturer Triloc
Topsoil	Brown	soft	0	0.1	Fittings Threaded Length 23 ft Set between 3 ft and 25.3 ft Slot .020
Sand	Tan & Gry		0.1	4	Set betweenft andft Slot
					ft andft Slot
Sand	Tan	dense	4	5.4	Filter Pack Doan! Privar Plant I 10/20
Silty Sand	Dk Brown	dense	5.4	7.5	le FEDILICIVEI FRANCE CONTRACTOR
Sifty Sand		dense			Source Gradition Method of installation Poured Composition S111ca Volume used 5.5 sacks Depth to top of fig. 1.5 ft
Sand	Tan	dense	7.5	26	Genut
Sandy Fat Clay	Gray	soft	26		Used? X Yes L: No Volume used 2.5 gal
					Neat Cement S: Bentonite
					Depth from 0 ft to 0.5 ft trom tt to 0.5
			_		Development pumped 40 minutes
					Metrico Doration
			1		Dates
					Static Water Level
			_		Date measured11 X: below, C above grade
					Pumping Water Level
					N/A ft below above grade Date
					•
			 	-	Specific Capacity N/A gpm/ft of drawdown atnours
					Duran
					Date installed N/A Type
					Manufacturer
		_			Depth of pump intake setting No of stages
					Onl Water lubrication Power source bowls
					shafting impellors Bowlidia Column pipe dia Length Modifications
					Manual Completion
					Pritiess adaptor Basement offset Distance above grade 2.5 ft
					Nearest Sources of Possible Contamination
					Well disinfected upon completion? Yes No
					Geophysical Logs Run
					1
					,
					No
Sontractor Name and Address			•		Water Quality
					Sample taken X Yes : C Where analyzedITC Environmental Consultants, Inc
		_			
Name of Driller Southwestern L	aboratorie:	s Inc.			0.400.407
State License Number					Date well completed 3/22/87

			Specific (gpm/ft of	Specific Capacity (gpm/ft of drawdown)		
Problem	Corrective Action Taken	Date	Before	After		
	,					
		-				
,						

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10068 CHARLESTON, S. C. 29411-0068

WELL DATA REPORT

WELL NUMBER GPT- 2-1 AREA 2

DATE OF INSTALLATION 3/19/8

Drill Date 3/19/87	Well Driller Southwestern Laboratories, Inc.
Depth of Boring 30.5 ft	Soil Sampling and Purpose of Boring Monitoring Well Installation
Drilling Method Hollow-stem auge	er Mud Type None
WATER LEVEL DATA (All meas	surements from top of casing)
Water Level 6.0 ft	Date of Measurement 3/22/87
DEVELOPMENT DATA	
Development Method Pumped	
Length of Time Developed	1 hr.
LOCATION OF BOREHOLE INFO	DRMATION
Drillers Log x	Geophysical Log
Physical Corex	Cutting Samples
Water Level Observations 5.33	2' on 3/30/87
DR!LLED BY S.W. Labs	SCCWD*
DEVELOPED BY HLA	5CCWD*
TECHNICAL OVERSIGHT BY	HLA

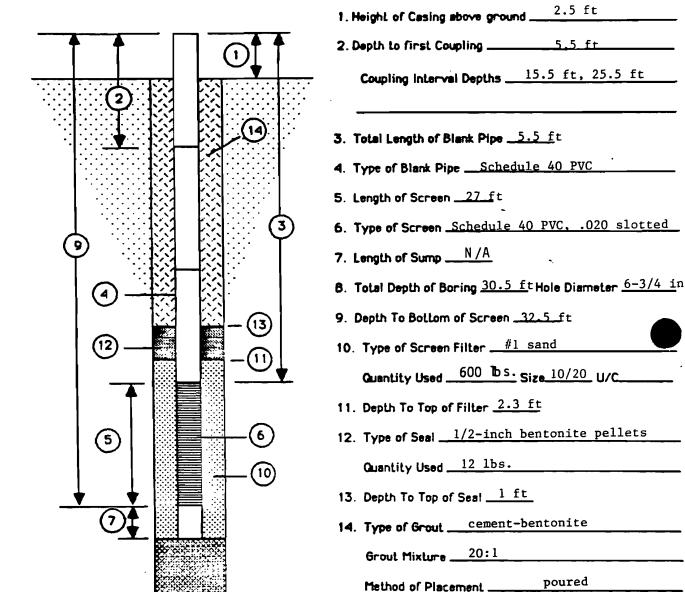
SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2185 EAGLE DR., P.O. BOX 10068 CHARLESTON S. C. 29411-0068

WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 2-1

DATE OF INSTALLATION 3/19/87



WELL AND PUMP DATA

Location of Well GPT - 2-1					Property owner's name and address		
County Harrison Township No.	mber Range Number	Section No. Fr					
8	N 11 5	6 .	— ^N \	NW	NCBC Gulfport		
	<u>©</u> <u>@</u>				Gulfport, Mississippi		
treet Address and City or Distance and D	Direction from Road in	ntersections					
Show exact location of well in section gnd	with an 'x'	Sketch m	ap of wel	location	Well depth Datum point from which all measurements are taken G round Surtace		
Addition Block No.					Method of Drilling i Cable tool Hollow rod Driven Dug Direct rotary Air rotary Bucket auger X Hollow Reverse rotary Jeffeo Flight auger stem auger		
Lot Nur	nber				Domestic Public supply findustrial [1] [1] [1] [1] [1] [1] [1] [1] [1] [1]		
1 mag					Salv L' Welded surface 2.5 ft		
Remarks, Elevation, Source of Data, etc. N 259531.08 E 404631.	47 (MS Stat	e Plane)		1 SS		
Elevation 25.23 ft (NO	(D)		•		Intake Portion of Well		
Borehole data		No.de	F	To	Screen type Schedule 40 or open hole from to to fi		
Formation Log	Color	Hardness	From		Material DVC Dia Dia		
Topsoil	Brown_	soft	0	.25	Set between 3 ft and 30 ft Slot 020		
Silt	Tan	soft	.25	0.5			
Silty Sand	Dk Gray to	med dense	0.5	4.7	Method of installation		
Sand	Lt Brown	loose	B 4.7	30	Filter Pack Source Pearl River Plant I Gradation 10/20 Method of installation poured Composition silica		
Sandy Fat Clay	Gray	soft	30		Volume used 6 sacks Depth to top of 1 p 2.3 ft		
					Grout Used? (x Yes ::: No Volume used 2.5 gal		
.					C Neat Cement Selectorite Method of installation poured		
	_	 			Depth from 0 th to 1 th		
		 -			Development		
			ļ		Method Dumped Duration 1 hr. Dates 3/22/8/ Sand content after 0 m in 0		
					Chemicals used		
					Static Water Level 3.5 ft 2 below C above grade		
					Date measured 3/22/87		
					Pumping Water Level N/A ft below above grade Date		
	 				After hrs pumping at gpm		
			-		Specific Capacity N/A gpm/ft of drawdown alnours		
			-		Pump Y/A		
					Pump Date installed Manufacturer Model No		
					H P Volts Capacity Depth of pump intake setting No of stages		
					Oil : Water lubrication Power source		
					Material of drop pipe		
	 				Column pipe dia Length: Modifications		
	_				Well Head Completion Pitless adaptor Basement offset Distance above grade		
					Nearest Sources of Possible Contamination 11 Direction		
					Well disinfected upon completion? Yes No		
					Geophysical Logs Run		
					No		
Contractor Name and Address					Water Quality Sample taken' X Yes : Vo. Where analyzedITC_Environmental Consultants, Inc.		
Name of Dulley Southwestern	n Laboratori	ies. Tho					
realize of Disser	. Daboratori	, 1110	_		3/22/87		
State License Number					Date well completed		

			Specific (gpm/ft of	Capacity drawdown)
Problem	Corrective Action Taken	Date	Before	After
				_
•				
· · · · · · · · · · · · · · · · · · ·			_	
			_	
·				

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10068 CHARLESTON. S C 29411-0068

TECHNICAL OVERSIGHT BY___HLA

WELL DATA REPORT

WELL NUMBER GPT - 2-2 AREA 2

DATE OF INSTALLATION 3/20/87

WELL HOLE DATA Drill Date 3/20/87 Well Driller Southerwestern Laboratories, Inc. Soil Sampling and Depth of Boring 20 ft Purpose of Boring Monitoring Well Installation Drilling Method Hollow-stem auger Mud Type____ None WATER LEVEL DATA (All measurements from top of casing) Water Level 6.1 ft Date of Measurement 3/23/87 DEVELOPMENT DATA Pumping Development Method___ Length of Time Developed 40 m in u tes LOCATION OF BOREHOLE INFORMATION Drillers Log X Geophysical Log Physical Core X Cutting Samples Cutting Samples Water Level Observations 5.01' on 3/30/87 DRILLED BY S.W. Labs DEVELOPED BY HLA SCOWD#_____

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2195 EAGLE DR. P. O BOX 10088 CHARLESTON 5 C 29411-0068

(4) (13) **(6)** (5) (10)

WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 2-2

DATE OF INSTALLATION _____3/20/87

- 1. Height of Casing above ground 2.5 ft
- 2. Depth to first Coupling _____5.5 ft

 Coupling Interval Depths _____15.5 ft
- 3. Total Length of Blank Pipe 5.5 ft
- 4. Type of Blank Pipe Sch. 40 PVC
- 5. Length of Screen ____15_ft
- 6. Type of Screen Sch. 40 PVC, .020 slotted
- 7. Length of Sump N/A
- 8. Total Depth of Boring 20 ft Hole Diameter $\frac{6-3/4 \text{ in}}{10}$
- 9. Depth To Bollom of Screen 20.5 ft
- 10. Type of Screen Filter #1 sand

 Quantity Used 500 lbs. Size 10/20 U/C
- 11. Depth To Top of Filter 2 ft
- 12. Type of Seal 1/2-inch bentonite pellets

 Quantity Used 12 pounds
- 13. Depth To Top of Seal $\frac{0.5 \text{ ft}}{}$
- 14. Type of Grout _____cement-bentonite

 Grout Mixture _____20:1

 Method of Placement _____poured

		,	WFILA	ND PU	MP DATA	
ocation of Well GPT - 2-2					Property Owner's name and address	•
GF1 - 2-2		Section No. Fra	Ction		NORG Culf	
- Harrison	N E	. _		NW .	NCBC Gulfport Gulfport, Missi	iccinni
8 <u>entertio</u>	Š ¹¹ ⊗	6 -			Guilport, Miss	rssibbi
and Address and City or Distance and	Direction from Road In	tersections	_			
ow exact location of well in section gr	id with an 'x'	Sketch m	ap of well	location	Weil depth Datum poi	nt from which all measurements are taken Ground Surface
	Number				Method of Dritting ['Cable tool : Hollow roc : Direct rotary : Air rotary : Reverse rotary : Jetted Use : Domestic : Public sur	: Driven : Dug : Bucket auger : Holl : Flight auger stem aug
Lot N	umber				trication Municipal Test Well Heating o Casing Type [Steel Enthreaded [Galv Dwelded	Commercial
name Elevation Course of Data ata					X ¹ PVC î 1 Solvent	Drive shoe? Yes No Hole
N 259528.99 E 404969.63 (MS State Plane) Elevation 25.32 ft (NGVD)					1 iss weided 3 ft	
rehole data	1012)		_		Intake Portion of Well Screen type Schedule 40	or open hole from If to
Formation Log	Color	Hardness	From	To	Manufacturer TTTLOC	
Silty Sand	Brown	med dense	0	2	Fittings — PVC — — — — — — — — — — — — — — — — — — —	Dia Length 15 ft
Silty Sand	Gray	med dense	2	4	Set between 3 tt and 1 tt and	
Sandy Silt	Gray	1oose	4	6.6	Method of installation	
Sand	Lt Gray	med dense	6.6	8.3	Source Pearl River	Plant I Gradation 10/20
Silty Sand		dense to v. dens		12.7	Method of installation <u>DOUT</u>	Composition silica Depth to top of tp 2_ft
Sand	Brn & Gray	T			Grout Used? X. Yes L. No Volume us	2.5 981
		 			C Neat Cement (xBentonite	<u> </u>
dy Fat Clay	Gray	soft	18		Method of installation DOIL Depth from 0	ft toft tof
					Development pumped	40 minutes
·					Dates 3723/87 Chemicals used no.	Sand content after 4U MTIN (
					Static Water Level	
					3.6 It % below Date measured 3/23/87	
					Pumping Water Level	
					After ft . below	above grade Dategr
					Enceste Connecto	mping at gi
	1					gpm/fi of drawdown atnours
		 	-		Pump N/A	
					Date installed	Type Model No
			-		HP Volts	Canacity
					i Oit L Water lubrication Power si	
					shafting impeliers	bowls
					Column pipe dia Lengin	Modifications
		-			Well Head Completion Pitless adaptor Basement offse	et Distance above grade 2.5 ft
					Nearest Sources of Possible Conta	amination
					Well disinfected upon completion?	
					Geophysical Logs Run	140
		 				
					No	-
			<u> </u>			
itractor Name and Address					Water Quality Sample taken Xies in Appre analyzed JTC Envi	ironmental Consultants, Inc
		_				THE TOTAL AND TH
Name of Driller Southwester	rn Laboratori	es, Inc	<u>. </u>		3/23/	87
State License Number			_		Date well completed	

			Specific (gpm/ft of				
Problem	Corrective Action Taken	Date	Before				
·							
				<u> </u>			
		`					
		<u> </u>					
				<u> </u>			
				1			
		i		<u> </u>			

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10068 CHARLESTON, S C 29411-0068

WELL DATA REPORT

WELL NUMBER GPT - 2-3 AREA 2

DATE OF INSTALLATION 3/20/87

Drill Date	Well DrillerSouth	western Laboratories, Inc.
Depth of Boring 15 ft		Soil Sampling and
Drilling Method Hollow-stem auge	erMud TypeNo	ne
WATER LEVEL DATA (All measu	urements from top of	casing)
Water Level 4.4	Date of Measuremen	3/23/87
DEVELOPMENT DATA		
Development Method Pumped		
Length of Time Developed 30	minutes	
LOCATION OF BOREHOLE INFO	RMATION	
Drillers Log X	Geophysical Log	
Physical Core	Cutting Samples	
Water Level Observations 3.	.691 on 3/30/87	
DRILLED BYS.W. Labs	SCCWD*	
DEVELOPED BYHLA	5CCWD*	
TECHNICAL OVERSIGHT BYHL	A	

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR . P. D. BOX 10068 CHARLESTON 5 C. 29411-0068

(6) (5` (10)

WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 2-3

DATE OF INSTALLATION ____3/20/87

- 1. Height of Casing above ground ______2.5 ft_____
- 2. Depth to first Coupling $\frac{5.5 \text{ ft}}{\text{Coupling Interval Depths}}$
- 3. Total Length of Blank Pipe 5.5 ft
- 4. Type of Blank Pipe Schedule 40 PVC
- 5. Length of Screen 10 ft
- 6. Type of Screen Schedule 40 PVC, .020 slotted
- 7. Length of Sump N/A
- 8. Total Depth of Boring $15.5 \, \mathrm{ft}$ Hole Diameter $6-3/4 \, \mathrm{in}$
- 9. Depth To Boltom of Screen 13 ft
- Quantity Used 250 lbs. Size 10/20 U/C
- 11. Depth To Top of Filter 2 ft
- 12. Type of Seal 1/2-inch bentonite pellets

 Quantity Used 12 pounds
- 13. Depth To Top of Seal _____0.3 ft
- 14. Type of Grout ____cement-bentonite

Grout Mixture 20:1

Method of Placement _____poured

COMMENTS ON INSTALLATION

Location of Well GPT - 2-3					Property owner's name and socress
County Harrison Township Nu	mber Runge Number E	Section No. Pr	NW	NW	
Section 8	Š 11 Č	6	- "	W W	NCBC Gulfport
et Address and City or Distance and D	rection from Road I	ntersections			Gulfport, Mississippi
Show exact location of well in section grid	with an 'x'	Sketch n	nap of wei	l location	Well depth Datum point from which all measurements are taken
N Address					13 ft Ground Surrace
Addition	Name				Cable tool Hollow rod Driven Cloud Direct rotary Air rotary Bucket auger X Hollow
Block Nu	mber				Reverse rotary Jeffed Flight auger stem auge
					Domestic Public supply Fillindustrial Figure 1
i_ot Nun	nDef				: Test Well
1 mile					[:Steel 20 Threaded Height above parkew [:Galv Dwelded surface 2.5 £t]
Remarks, Elevation, Source of Data, etc.					- ☆ PVC
N 260754.23 E 404889.4	48 (MS State	e Plane)	•	2 in to 3 if Wg1 ib/ft Sch No 40 6-3if4 to 15 in to in to in to
Elevation 24.62 ft (NG	VD)				in to it Wgt tb/tt Sch No in to
Borehole data		1 10	T #	To	Screen type Schedule 40 or open hole from the to the Manufacturer Triloc
Formation Log Topsoil	Brown	soft	From	0.1	- Material PVC Dia 2 Fittings Threaded Length 10 ft
	Lt Gray &	1.	+	1	Set between 3 tt and 10 tt Slot
Silty Sand	Tan Dk Gray	loose	2.8	4.3	Method of installation ft and ft Slot
Silty Sand		loose	4.3	8.2	Fitter Pack Pearl River Plant I Gradation 10/20
Silty Sand	Tan	loose			Method of installation <u>poured</u> <u>Composition Silica</u> Volume used <u>2.5 sacks</u> Depth to top of fig. 2
Sand	Gray	dense	10.1	10.1	Grout Used? ** Yes L: No Volume used 2.5 gal
Silty Sand Sandy Fat Clay	Dk Brown Gray	dense soft	13		Control Section Control Cont
- Sandy Pat Clay	Gray	5016	15		Depth from 0 ft to 0.3 ft to 11 ft to 12 ft to 15 ft to 1
				_	Development Pumped Duration 30 m in u tes Dates 3/23/67 Sand content after 5 m in 0
					Dates 3/23/6/ Sand content after 5 m in 0 Chemicals used 10 n e
					Static Water Level 1.9 ft 3t helow Cabove grade
					Date measured 3/23/87
					Pumping Water Level N/A It below above grade Date
					Specific Capacity NT / A
					Date
		_			Pump Date installed N/A Type
<u> </u>					Manufacturer
					Depth of pump intake settingNo_ of stagesNo_ of stages
					Shafting Impellers Bowl dia Column pipe dia Length Modifications
<u> </u>	-				Well Heart Completion
					Pitless adaptor . Basement offset Distance above grade 2.5 ft Nearest Sources of Possible Contamination
					tt Direction
					Geophysical Logs Run
					No
Contractor Name and Address					Water Quality Sample taken' XYes for
					Where analyzed
Name of Driller Southwestern	Laborator:	ies, Ind	c		3/23/87
State License Number					Date well completed

			Specific (gpm/ft of	Capacity drawdown)
Problem	Corrective Action Taken	Date	Before	After

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10068 CHARLESTON, S C 29411-0068

TECHNICAL OVERSIGHT BY HLA

WELL DATA REPORT

WELL NUMBER GPT - 3-1 AREA 3

DATE OF INSTALLATION___3/13/87

WELL HOLE DATA Drill Date 3/13/87 Well Driller Southwestern Laboratories Soil Sampling and Monitoring Well Installation Depth of Boring 29 ft Purpose of Boring Drilling Method Hollow-stem auger Mud Type_____ WATER LEVEL DATA (All measurements from top of casing) Water Level 5 ft Date of Measurement 3/23/87 **DEVELOPMENT DATA** Development Method Pumped 30 minutes Length of Time Developed__ LOCATION OF BOREHOLE INFORMATION Drillers Log X Geophysical Log Physical Core___x Cutting Samples_____ 4.41' on 3/30/87 Water Level Observations_____ DRILLED BY_____S.W. Labs DEVELOPED BY HIA SCCWD*_____

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2195 EAGLE DR., P. O. BOX 10068 CHARLESTON S. C. 29411-0068

(13) 6 5

WELL CONSTRUCTION DETAILS

WELL NUMBER ___ GPT - 3-1

DATE OF INSTALLATION 3/13/87

- 1. Height of Casing above ground 2.5 ft
- 2. Depth to first Coupling 5.0 ft

 Coupling Interval Depths 15.0 ft, 25.0 ft
- 3. Total Length of Blank Pipe ___5_ft
- 4. Type of Blank Pipe Sch. 40 PVC
- 5. Length of Screen _26_ft
- 6. Type of Screen Sch. 40 PVC, .020 slotted
- 7. Length of Sump $\frac{N/A}{}$
- 8. Total Depth of Boring 29 ft Hole Diameter 6-3/4 in
- 9. Depth To Bollom of Screen 31.0 ft
- 10. Type of Screen Filter #1 sand

 Quantity Used 650 1bs. Size 10/20 U/C
- 11. Depth To Top of Filter 1.5 ft
- 13. Depth To Top of Seal 0.2 ft
- 14. Type of Grout _____cement-bentonite

 Grout Mixture ____20:1

 Method of Placement _____poured

WELL AND PUMP DATA

			WELL	AND PU	In the second se
Location of Well GPT - 3-1					Property owner's name and address
County Harrison Township Numb	er Range Number 1	Section No. Fre	SI	E NE	Mana a 15 mana
Tourism 8	12 0 1 - 444			* *	NCBC Gulfport Gulfport, Mississippi
et Address and City or Distance and Dire	<u> </u>	tersections			
Show exact location of well in section grid wi	th an 'x'	Sketch m	ap of we l	location	Well depth 28.5 ft Detum point from which all measurements are taken G round Surface
Addition Na	me				Method of Dritting L'Cable tool Hollow rod Conven Code 1
 : : : -					Direct rotary Air rotary Bucket auger X. Hollow-
Block Num	ber				. Reverse rotary Jetted Flight arger Stem auger
│ ├ `╇'╇'╇`┥					: Domestic Public supply Filindustrial E:
Lot Numb	er e				Irrigation Municipal Commercial Commercial Test Well Heating or cooling XMonitoring Commercial XMonitoring X
S L					Casing Type
					[i Steel x Threaded Height above (1886)] [i Galv
Remarks, Elevation, Source of Data, etc.					LISS welded diameter
N 259462.41 E 403598.32	(MS State	Plane)			2 in to 2.5 if Wg1 to/ft Sch No40 6-3/r4 to 29 to 10/rt Sch No 40 in to 10/rt Sch No 10/rt Sch N
Elevation 25.63 ft (NGVD)				
Borehole data					Screen type Schedule 40 or open hole from 11 to 15
Formation Log	Color	Hardness	From	То	Manufacturer Triloc Material DVC Dia 2"
Sandy Lean Clay	Brown	med sft	0	6.4	Fittings Threaded Length 26 ft Set between 8.5 ft and 28.5 ft Slot
Silty Sand	Gray		6.4	6.9	ft and ft Slot
Sand	Gray		6.9	15.4	Method of installation
Sandy Fat Clay	Blue Gray	med stf	15.4	19.4	Source Pearl River Plant I Gradation 10/20 Method of installation poured Composition silica
Fat Clay	Blue Gray	med stf	19.4	25.8	Volume used 6.5 sacks Depth to top of fip 1.5
Sandy Fat Clay	Blue Gray	med stf	25.8		Grout Used? X Yes i.: No Volume used 2.5 gal
					C Neat Cement St Bentonte C
		1			Depth from
·		1			Development Method pumped Duration 30 minutes
		i	-	i	Dates 3/23/87 Sand content after 20 m in 0
				_	Static Water Level
					2.5 It
	_			ļ	Pumping Water Level
				ļ	
i.					Specific Capacity N/A
					Specific Capacity N/A gpm/ti of drawdown at nours
					Pump Date installed N/A Type
		Ì		1	Manufacturer Model No
			-	 	H P Voits Capacity Depth of pump intake setting No of stages
				<u> </u>	i Oil L Water lubrication Power source
!					shafting impellers Bowlidia
					Column pipe dia Length Modifications Well Head Completion
		-			Pirless adaptor Basement offset Distance above grade 2.5 ft
		 		-	Nearest Sources of Possible Contamination
<u> </u>					Weti disintected upon completion? Yes No
					Geophysical Logs Run
				<u> </u>	
					No
tractor Name and Address	_				Water Quality Sample taken's XYes to
					Where analyzed
Name of Ordier Southwestern	Laboratori	ies			·
State License Number					Date well completed 3/23/87

			Specific (gpm/ft of	Capacity drawdowi
Problem	Corrective Action Taken	Date	Before	After
		-		
		_		
		ı		
	<u> </u>	<u> </u>		

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10068 CHARLESTON 5 C 29411-0068

WELL DATA REPORT

WELL NUMBER GPT - 3-2 AREA 3

DATE OF INSTALLATION 3/13/87

Drill Date	Well Driller Southwestern Laboratories, Inc.						
Depth of Boring 29 ft	Soil Sampling and Purpose of Boring Monitoring Well Installation						
Drilling Method Hollow-stem aug	er Mud TypeNone						
WATER LEVEL DATA (All mea	surements from top of casing)						
Water Level 7.1 ft	Date of Measurement 3/17/87						
DEVELOPMENT DATA							
Development Method Pumped	1						
Length of Time Developed 30 $^{\pm}$	ninutes						
LOCATION OF BOREHOLE INFORMATION							
Drillers Logx	Geophysical Log						
Physical Corex	Cutting Samples						
Water Level Observations 6	5.79' on 3/30/8/						
DRILLED BY S.W. Labs	5CCW'D#						
DEVELOPED BY S.W. Labs	5CCWD=						
TECHNICAL OVERSIGHT BY	HLA						

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2135 EAGLE DR., P. O. SOX 10068 CHARLESTON 5 C. 29411-0068

[13] (6) (5)

WELL CONSTRUCTION DETAILS

WELL NUMBER ___GPT - 3-2

DATE OF INSTALLATION _3/13/87

- 1. Height of Casing above ground 2.4 ft _____
- 2. Depth to first Coupling ______5.4 ft _____

 Coupling Interval Depths _____15.4 ft , 25.4 ft _____
- 3. Total Length of Blank Pipe 5.4 ft
- 4. Type of Blank Pipe Sch. 40 PVC
- 5. Length of Screen ____26 ft
- 6. Type of Screen Sch. 40 PVC, .020 slotted
- 7. Length of Sump $\frac{N/A}{}$
- 8. Total Depth of Boring 29 ft Hole Diameter 6-3/4 in
- 9. Depth To Boltom of Screen 31.4 ft
- 10. Type of Screen Filter #1 sand

 Quantity Used 600 1b Size 10/20 U/C
- 11. Depth To Top of Filter 2 ft
- 12. Type of Seal 1/2-inch bentonite pellets

 Quantity Used 25 lbs.
- 13. Depth To Top of Seal $\frac{0.5 \text{ ft}}{}$
- 14. Type of Grout _______cement-bentonite

 Grout Mixture ______20:1

 Method of Placement ______poured

COMMENTS ON INSTALLATION.

WELL AND PUMP DATA

Location of Well GPT -	3-2					Property owner's name and address
County	Township Numb	er Range Number	Section No.	Praction	1 3777	
<u> Harrison</u>	8 2	12 2	1		NE .	NCBC Gulfport
		<u> </u>				Gulfport, Mississippi
Street Address and City or Dist	ance and Dire	ction from Road In	itersections			
Show exact location of well in a	section grid wit	th an 'x'	Sketch	map of well	location	Well depth Datum point from which all measurements are taken 29 ft G round Surface
N T T T T T T T T T T T T T T T T T T T	Addition Nat					Method of Drilling Cable tool Hollow rod Driven Dug Direct rotary Air rotary Bucket auger X Hollow- Reverse rotary Jetting Flight auger stem auger
s	Lot Number	er				Domestic Public supply I Industrial Commercia. Test Well Heating or cooling Monitoring Casing Type
1 mde						[] Galv
N 259450.46 E 4 Elevation 25.43	104024.9	•	e Plan	e)		X PVC F Solvent Drive shoe? Yes No _X Hole
Borehole data					1	Screen type Schedule 40 or open hole from to to to fit
Formation Log		Color	Hardness	From	То	Manufacturer Triloc Material PVC Threaded leading 10 IL.
Silty Sand		Gray		0	9.5	Set between 3 ft and 29 ft Slot 020
Sand		Lt Gray		9.5	<u> 27.5</u>	ft andft Slot
Fat Clay		Blue Gray	md stf	f 27.5		Method of installation
						Source Pearl River Plant I Gradation 10/20 Method of installation poured Composition SILICA
						Volume used 6 sacks Depth to top of 1 p 2 ft
						Grout Used? ix Yes i. No Volume used 2.5 gal
						© Neat Cement SkiBentonite ©
			-			Depth from 0 ft to 0.5 ft
				+		Development pumped 30 minutes
				_		Dates 3/17/87 Sand content after 10 m in . 0
				 		Chemicals used
		<u> </u>				24.7 It X: below C: above grade Date measured 3/17/87
						Dumping Water I mail
						N/A 11 below _above grade Date
						· · · · · · · · · · · · · · · · · · ·
					-	Specific Capacity N/A gpm/ft of drawdown atnours
						Pump N/A Date installed Type
						Manufacturer Model No H P Volts Capacity
,	-		 	+		Depth of pump intake setting No of stages
			1	+		." Oil Water lubrication Power source
			-			shafting Bowl dia Column pipe dia Length Modifications
		· · · · · · · · · · · · · · · · · · ·				Well Head Completion Pitless adaptor Basement offset Distance above grade 2.4 ft
		_				Nearest Sources of Possible Contamination
						Well disinfected upon completion? Yes No
						Geophysical Logs Run
						No
						1
Contractor Name and Address				لـــــــــــــــــــــــــــــــــــــ		Water Quality
						Sample taken? XYes No Where analyzed JTC Environmental Consultants, Inc.
South	western	Laborator	ies. I	nc.		
Name of Driller						Date well completed 3/17/87
State License Number Date						Date well completed 3/1/8/

			Specific Capacity (gpm/ft of drawdown)		
Problem	Corrective Action Taken	Date	Before	After	
<u> </u>					

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10068 CHARLESTON, S. C. 29411-0068

WELL DATA REPORT

WELL NUMBER GPT - 3-3 AREA 3

DATE OF INSTALLATION 3/14/87

Drill Date	3/14/87	Well Driller_	South	western Laboratori	.es
				Soil Sampling and Monitoring Well In	
				None	
WATER LEVEL	DATA (All measu	rements from	top of	casing)	
Water Level	7.3 ft.	Date of Meas	ureme	nt3/17/87	_
DEVELOPMENT	DATA				
Development Me	ethod Pumping				_
Length of Time	Developed 17	minutes			_
LOCATION OF	BOREHOLE INFOF	RMATION			
Drillers Log	<u> </u>	Geophysical L	.og		
Physical Core_	X	Cutting Samp	les		
Water Level Ob	servations <u>6.8</u>	81' on 3/30/87			_
DRILLED BY	S.W. Labs	S	CCWD:		
DEVELOPED BY	S.W. Labs	5	CCWD	-	
TECHNICAL OVE	RSIGHT BY	ILA	_	·	<u> </u>

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR., P. O BOX 10068 CHARLESTON 5 C 29411-0068

WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 3-3

DATE OF INSTALLATION __3/14/87

1. Height of Casing above ground
2. Depth to first Coupling5.3 ft
Coupling Interval Depths 15.3 ft, 25.3 ft
3. Total Length of Blank Pipe 5.3 ft
4. Type of Blank Pipe Sch. 40 PVC

- 5. Length of Screen 23 ft

 6. Type of Screen Sch. 40 PVC 0.020 slotted
- 7. Length of Sump N/A
- B. Total Depth of Boring $\frac{26 \text{ ft}}{\text{Hole Diameter}} = \frac{6-3/4 \text{ in}}{\text{Hole Diameter}}$

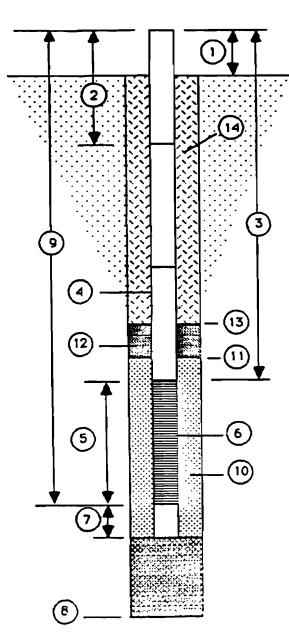
2.5 ft

- 9. Depth To Boltom of Screen __28.3 ft
- Ouentity Used 400 1bs Size 10/20 U/C
- 11. Depth To Top of Filter ______ft
- 12. Type of Seal 1/2-inch bentonite pellets

 Quantity Used 20 lbs
- 13. Depth To Top of Seal _____0.4 ft
- 14. Type of Grout ______cement-bentonite

 Grout Mixture _____20:1

 Method of Placement ______poured



COMMENTS ON INSTALLATION

<u>-</u>			WELL	AND PU	MP DATA
Location of Well GPT - 3-3					Property owner's name and address
County Harrison Township		Section No. Pri	ection N	E NE	
entering 8		1 -		• W W	NCBC Gulfport
	<u>Ø</u>				Gulfport, Mississippi
et Address and City or Distance an	nd Direction from Road Ir	ntersections			,
how exact location of well in section (Shatah =		ff location	Weil depth Datum point from which all measurements are taken
N	graduon x	Graphi III			25.8 ft Ground Surface
	ion Name				Method of Drilling L'Cable tool Hollow rod L'Driven L'Dug
					Direct rolary Air rolary Bucket auger X Hollos
- + + - Block	Number				Reverse rotary Jetted Flight anger stem auger
					Use Domestic Public supply Fundustrial
Lot	Number				tringation Municipal Commercial Test Well Healing or cooling (XMonitoring
					Casing Type
1 mile					[:Steel x]Threaded Height above/taxts/K
					- XPVC Si Solvent Drive shoe? Yes No Hole
lemarks, Elevation, Source of Data, et		\			tiss weided charmeter 2 in to 28 if Wgi to/fit Sch No 40 6-3 h4 to 26
N 259681.55 E 404204	4.99 (MS State	Plane)			
Elevation 25.01 ft (N	NGVD)				in tofi Wgito/ft Sch No in to
orehole data					Screen type Schedule 40 or open hole fromtrto
Formation Log	Color	Hardness	From	To	Manutacturer Triloc Material PVC Dia 211
Silty Sand	Brown		0	4	Fittings Threaded Length 23 ft Set between 2.8 ft and 25.8 ft Stot 020
	Lt Brown &		4	26	tt andtt Slot
Sand	Lt Gray		 	20	Method of installation
Fat Clay	Blue Gray	soft	26		Source Pearl River Plant I Gradation 10/20
					Source Pearl Kilver Plant 1 Gradation 10/20 Method of installation Doured Composition Silica
					Volume used 4 sacks Depth to top of tip 1.5 ft
		1			Grout Used? ★ Yes ② No Volume used 2.5 ga1
· · · · · · · · · · · · · · · · · · ·	-	<u> </u>	-		□ Neat Cement X : Bentonite E
			<u> </u>		Method of installation
			1		fromft toft
					Development pumping 17 min
				_	Dates 3/1//8/ Sand content after 10 m in 0 Chemicals used none
				_	Static Water Level
				 	Date measured 3/17/8/ Date measured 3/17/8/
					Pumping Water Level
					N/A tr. below _above grade Date
				1	After
		[1		gpm/ft of drawdown at hours
		1		-	Date
					Date installed N/A Type
					Manufacturer
		1			Depth of pump intake settingNo_ of stagesNo_ of stages
		 	\vdash	-	Material of drop pipe
		<u> </u>			shafting impeliers Bowlidia Column pipe dia Length Modifications
		<u> </u>	<u>L</u> _		Weit Head Completon
					Piless adaptor Basement offset Distance above grade 2.5 ft
	+		1		Nearest Sources of Possible Contamination It Sires ton
	-	-		1	Welt disinfected upon completion? Yes No
		<u> </u>	<u> </u>		Geophysical Logs Run
			T^{-}	1	No
Intractor Name and Address			<u> </u>	1	Water Quality
mental ratio and ratio £99			Sample laren Wes JTC Environmental Consultants, Inc.		
					where analyzed 510 Environmented Constitution, The
Name of DrifterSouthwest	tern Laborator	ries			3/17/87
Siate License Nutriber				Date well completed	

			Specific Capacity (gpm/ft of drawdov		
Problem	Corrective Action Taken	Date	Before	After	
	<u> </u>			-	
				-	
		-			
· · · · · · · · · · · · · · · · · · ·					
· · · · · · · · · · · · · · · · · · ·					
					
· · ·				<u> </u>	
					
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DEPARTMENT OF THE NAVY SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10068 CHARLESTON 5 C 29411-0068

WELL DATA REPORT

WELL NUMBERGPT - 4-1 AREA 4

DATE OF INSTALLATION 3/18/87

Drill Date 3/18/87	Well Driller Southwestern Laboratories, Inc.
Depth of Boring 19 ft	Soil Sampling and Purpose of Boring Monitoring Well Installation
Drilling Method Hollow-stem a	uger Mud Type None
WATER LEVEL DATA (All me	easurements from top of casing)
Water Level 2.6 ft	Date of Measurement 3/24/87
DEVELOPMENT DATA	
Development Method Pump	ed
Length of Time Developed	40 minutes
LOCATION OF BOREHOLE IN	FORMATION
Drillers Logx	Geophysical Log
Physical Corex	Cutting Samples
Water Level Observations2	2.66 on 3/30/87
DRILLED BYS.W. Labs	SCCWD*
	5CCWD*
TECHNICAL OVEDSIGHT BY	HLA

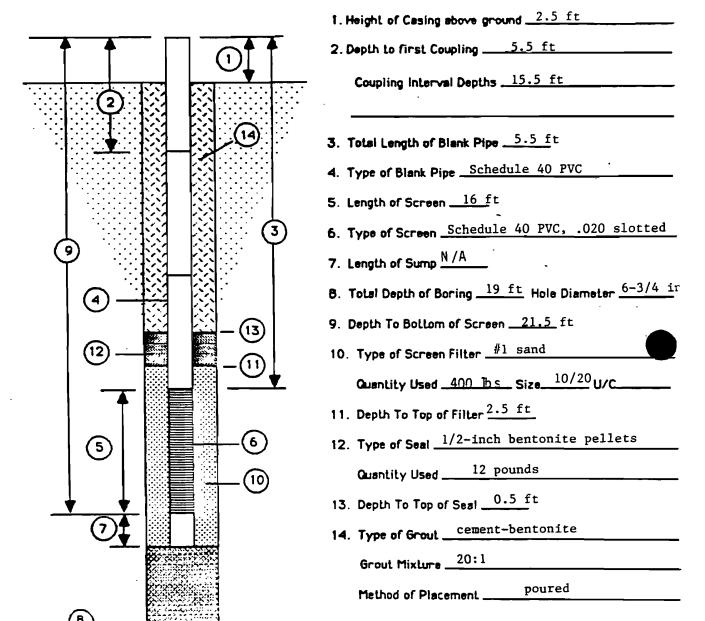
SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR.. P O BOX 10068 CHARLESTON 5 C 29411-0068

WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 4-1

DATE OF INSTALLATION 3/18/87



WELL AND PUMP DATA

Location of Well GPT - 4-1			****	11010	Property owner's name and address
County Harrison Township Nu	mber Range Number E	Section No. Pr	SE	NE NE	
No.	o 12 o d	1 -	•	W W	NCBC Gulfport
et Address and City or Distance and D	S Part l				Gulfport, Mississippi
or Asserted and only or Distance and the	RECION NOW HOUSE	1101 000 100 10			
Show exact location of well in section and	with an 'x'	Sketch II	rap of wel	location	Well depth Datum point from which all measurements are taken
N					Well depth 19 ft Datum point from which all measurements are taken G round Surrace
Addition	Name				Method of Drilling
 					i Cable tool Hollow rod Driven Dug Drect rotary Air rotary Bucket auger Star 2100 PT
Bioch Nu	mber				Reverse rotary Jetted Flight anger Stem auger
					Use Domestic Public supply Fillinguistral E
Lot Nun	nher				Irrigation Municipal Commercial
					: Test Well
S1 mile					Casing Type [/ Steel
· ···					[1Galv DWelded surface 2.5 ft
Remarks, Elevation, Source of Data, etc.					X PVC [Solvent Drive shoe? Yes No Hole transfer Hol
N 258263.03 E 403412.4	4 (MS State	Plane)			2.5 in to 3 ft Wgt to/ft Sch No 40 6-3 of 4 to 19
71	m)				in toft Wg1lb/ft Sch Noin to in toft Wg1lb/ft Sch Noin to
Elevation 24.83 ft (NGV	(עי)				Intake Portion of Well
Borehole data	T	Tura	T = -		Screen type Schedule 40 or open hole from the to ft Manufacturer Triloc
Formation Log	Color	Hardness	From	To	Material PVC Dia 211
Gravel			0	-25	Fittings Threaded Length 16 ft Set between 3 ft and 19 ft Slot
Sand	Tan	loose	25	1.7	ft andft Slot
	Brown &	 	 	1	Method of installation ft Slot
Silty Sand	Dk Gray	loose	1.7	4	Filter Pack Pearl River Plant I Gradum 10/20
Sand	Lt Gray	dense	4	19	Source Method of installation poured Composition silica
Sandy_Clay	Gray		19		Volume used 4 sacks Depth to top of fig. 2.5 ft
		i			Grout Used? X Yes C: No Volume used
			 		□ Neat Cement 1/2 Bentonite □ □
	_ ـ				Method of installation <u>poured</u> Depth from 0 to 0.5 th
					from ft to ft
					Development pumped Duration 40 minutes
			 		Dates 3/24/87 Sand content after 5 m in 0
					Chemicals used None Static Water Level
					Date measured 3/24/87
		1			
					Pumping Water Level N/A ft below above grade Date
			 		After hrs pumping at gpm
			<u> </u>		Specific Capacity N/A gpm/t: of drawdown at nours
					Cate
					Pump Date installedN/AType
					Manufacturer Mode: No
			<u> </u>		H.PVoltsCapacity Depth of pump intake settingNo of stages
					Oil C Water lubrication Power source
					shafting impellers Bowl dia
	1				Column pipe dia Length Modifications
		 			Well Head Completion Pittess adaptor Basement offset Distance above grade 2,5 ft
···					Nearest Sources of Possible Contamination
	1				ttEirection
					Geophysical Logs Run
		_			-
					No
dontractor Name and Address					Water Quality Sample taken? Wes to
					Where analyzedITC Environmental Consultants, Inc.
Name of Driber Southwester	n Laborator	ies. Tno	2.		
			-		3/24/87
State License Number					Date well completed

Problem Corrective Action Taken Date Betore Att				Specific (gpm/ft of	Specific Capacity (gpm/ft of drawdown)		
	Problem	Corrective Action Taken	Date	Before	After		
				L			
			-				
			·				
	···		-	-			

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2195 EAGLE DR P O BOX 10068 CHARLESTON, S C 29411-0068

TECHNICAL OVERSIGHT BY HLA

WELL DATA REPORT

WELL NUMBERGPT - 4-2 AREA 4

DATE OF INSTALLATION 3/19/87

WELL HOLE DATA		
Drill Date3/19/87	Well Driller South	western Laboratories, Inc.
Depth of Boring 28 ft	Purpose of Boring_	Soil Sampling and Monitoring Well Installation
Drilling Method Hollow-stem auge	rMud TypeNon	ne
WATER LEVEL DATA (All measu	rements from top of	casing)
Water Level4.9 ft	Date of Measuremen	nt3/24/87
DEVELOPMENT DATA		
Development Method Pumped	· · · · · ·	
Length of Time Developed 40 m	inutes	
LOCATION OF BOREHOLE INFO	RMATION	
Drillers Logx	Geophysical Log	
Physical Corex	Cutting Samples	
Water Level Observations 5.0	03' on 3/30/87	
DR!LLED BY S.W. Labs	בררעיי	
DEVELOPED BYHLA	SCCWD*	·

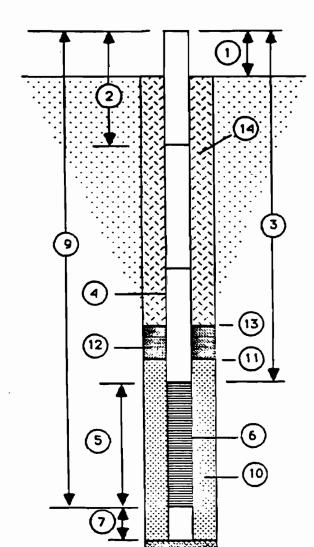
SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR. P O BOX 10068 CHARLESTON 5 C 29411-0068

WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 4-2

DATE OF INSTALLATION 3/19/87



1. Height of Casing above grow	und
2. Depth to first Coupling	5.2 ft
Coupling Interval Depths	15.2 ft, 25.2 ft

2.5 ft

- 3. Total Length of Blank Pipe 5.2 ft
- 4. Type of Blank Pipe _ Schedule 40 PVC
- 5. Length of Screen 23 ft
- 6. Type of Screen Schedule 40 PVC. .020 slotted
- 7. Length of Sump N/A
- B. Total Depth of Boring 28 ft Hole Diameter 6-3/4 in
- 9. Depth To Bollom of Screen 28.2 ft
- 10. Type of Screen Filter #1 sand Quantity Used 450 lbs. Size 10/20 U/C
- 11. Depth To Top of Filter 2 ft
- 12. Type of Seal 1/2-inch bentonite pellets Quantity Used 12 1bs.
- 13. Depth To Top of Seal 5 ft
- 14. Type of Grout ____cement-bentonite 20:1 Grout Mixture __ Method of Placement ___poured

WELL AND PUMP DATA

-			WELL,	-,10 70	Process arreade name and address
Location of Well GPT - 4-2					Property owner's name and address
County Harrison Township Num		Section No. Fra	ection CT	, MIT	NCBC Gulfport
- Harrison 8	12	1 -	_ SE	E NE	Gulfport, Mississippi
	<u> </u>			-	Guilport, mississippi
et Address and City or Distance and Dir	ection from Road In	ntersections]
Show exact location of well in section grid w	ith an 'x'	Sketch m	sp of wel	location	Well depth Datum point from which all measurements are taken
N					25.7 ft Ground Surface
Addition N	ame .				Method of Drilling L'Cable tool : Mollow rod : Driven :: Dug
▎▝ ▗ ▗ ▕▗ ▐▗▃▋▐					Direct rotary Am rotary Bucket auger X Hollow
Block Nurr	rber				Reverse rotary Jetted Flight anger Stem auge
					Use Public supply Filindustrial Filind
Lot Numt					trigation Municipal Commercial
 					: Test Well Heating or cooking XMonitoring
\$					Casing Type (i Steel X) Threaded Height above (1966)
1 mile ———					[1Galv DWelded surface 2.5 ft
Remarks, Elevation, Source of Data, etc.					TISolvent Drive shoe? Yes No Hole USS weigled
N 258250.00 E 403825.13	R (MS State	Plane			2 in to 2.7 ft Wg1 tb/ft Sch No 40 6-3 fr4 to 28
		· · · · · · ·			
Elevation 28.76 ft (NGVI	0)				
Borehole data					Intake Portion of Well Schedule 40 or open hole from ## toff
Formation Log	Color	Hardness	From	To	Manufacturer Triloc Dia 2"
Topsoil	Brown		0	.2	Filtings threaded Length 23 ft
100,5011	Brown		 	••	Set between 2.7 ft and 25.7 ft Slot
Sand	Tan	dense	.2	3	ft andft Slot
Sand	Lt Gray	dense	3	11.7	Method of installation
Sand	LL Gray	dense	Ť		Filter Pack Doors Discon Discon 10/20
Sand	Tan & Bwn	dense	11.7	26	Method of installation poured Composition S111ca
Sandy Fat Clay	Gray	soft	26		Volume used 4.25 sacks Depth to top of fig. 2 ft
Sandy Fat Clay	U. Ay	Suit	7.0		Grout
				<u> </u>	Used? CXYes C: No Volume used C: Neat Cement
					Method of installation
					Depth from U ft to U 5 ft to from ft to ft
	 -			1	Development pumped 40 min
				ļ	Method Duration
					Chemicals used None Sand content after 10 m in 0
				_	Static Water Level
	ļ	-		 	Date measured 13/24/87 above grade
					Pumping Water Level
					N/A ft . belowabove grade Date
			 		After hrs pumping at gpm
· 				ļ	Specific Capacity N/A gpm/ft of drawdown at
		1			Date
					Pump N/A
					Date installed
					HP Volts Capacity
					Depth of pump intake settingNo of stagesNo of stages
	+			 	Material of drop pipe, bowls
					shafting mpeliors Bowl dia Column pipe dia Length Modifications
					Well Head Completion
	+		 	1	Pritess adaptor Basement offset Distance above grade2.5 ft
	1		ļ		Nearest Sources of Possible Contamination
					11 Execution 1 1 1 1 1 1 1 1 1
					Geophysical Logs Run
			ļ	-	
					No
Officers Name and Add	L	<u></u>		<u> </u>	
Contractor Name and Address					Water Quality Sample taken's XYes
					Sampe laren' X ^{Yes} JTC Environmental Consultants, Inc
	Taka				
Name of Driller Southwester	n Laborato	ries, I	nc.		3/24/87
. State License Number				Date well completed	

			Specific (gpm/ft of	Capacity
Problem	Corrective Action Taken	Date	Before	After
		 		
······································				
			_	
		1		
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SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2195 EAGLE DR P O BOX 10068 CHARLESTON: S C 29411-0068

WELL DATA REPORT

WELL NUMBER GPT - 4-3 AREA 4

DATE OF INSTALLATION 3/19/87

WELL HOLE DATA		•
Drill Date3/19/87	Well DrillerSou	thwestern Laboratories, Inc.
Depth of Boring 29 ft		Soil Sampling and Monitoring Well Installation
Drilling Method Hollow-stem auger	Mud Typenon	e
WATER LEVEL DATA (All measu	irements from top of	r casing)
Water Level 10 ft	Date of Measuremen	
DEVELOPMENT DATA		
Development Method Pumped		
Length of Time Developed	15 minutes	
LOCATION OF BOREHOLE INFOR	RMATION	
Drillers Logx	Geophysical Log	
Physical Corex	Cutting Samples	
Water Level Observations 9	.54 on 3/30/87	
DRILLED BY S.W. Labs	SCCWD	-
DEVELOPED BY HLA	5CCWD:	-
TECHNICAL OVERSIGHT BYHLA		

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR.. P O BOX 10068 CHARLESTON 5 C 29411-0068

(6) (5) (10)

WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 4-3

DATE OF INSTALLATION 3/19/87

- 3. Total Length of Blank Pipe 5.6 ft
- 4. Type of Blank Pipe Schedule 40 PVC
- 5. Length of Screen 23 ft
- 6. Type of Screen Schedule 40 PVC, .020 slotted
- 7. Length of Sump N/A
- 8. Total Depth of Boring $\frac{29 \text{ ft}}{\text{Hole Diameter}}$ Hole Diameter $\frac{6-3/4 \text{ ir}}{\text{Hole Diameter}}$
- 9. Depth To Bollom of Screen 28.6 ft
- 10. Type of Screen Filter #1 sand

 Quantity Used 550 lbs. Size 10/20 U/C
- 11. Depth To Top of Filter $\frac{2.5 \text{ ft}}{}$
- 12. Type of Seal 1/2-inch bentonite pellets

 Quantity Used 12 pounds
- 13. Depth To Top of Seal 1 ft
- 14. Type of Grout ______cement-bentonite

 Grout Mixture _____20:1

Method of Placement poured

WELL AND PLIMP DATA

<u>•</u>			WELL	AND PU	IMP DATA
Location of Well GPT - 4-3				-	Property owner's name and address
County Township Numi		Section No. Pr	seson ST	E NE	
Harrison 8	N 12 S	1 -		16 16	NCBC Gulfport
	<u> </u>) -			Gulfport, Mississippi
et Address and City or Distance and Din	ection from Road Ir	ttersections			
Show exact location of well in section and w	ith an 'x'	Sketch m	nap of wel	location	Well depth Datum point from which all measurements are taken
N					26 ft Ground Surface
Addition No	sme				Method of Drilling i Cable tool Hottow rod Driven 11 Dug.
					i Cable tool Hollow rod Driven Dup X Hollow rod Driven Stell auger X Hollow Stell auger Stell auger
Block Num	ber				Use
▎▐▘ ▝ ▘▜▗ <u>▐</u>					Domestic Public supply Fundustrial Fig.
Lot Numb	HET				tringation Municipal Commercial Test Well Heating or cooling X Monitoring
 					Casing Type
1 mile —					[i Steel 图 Threaded Height above #6666
Remarks, Elevation, Source of Data, etc.					7KPVC
N 258629.94 E 403790.10	(MS State	Plane)			
 Elevation 31.38 ft (NGVI	.)				in toft Wgt
Borehole data	//				Intake Portion of Well Screen type Schedule 40 or open hole from the to the
Formation Log	Color	Hardness	From	To	Manufacturer Triloc
		Tieroness	1		Material PVC Dia 211 Fittings Threaded Length 23
Topsoil	Brown	~	0_	.4	Set between _3ft_ andftSlot
Sand Fill	Tan	loose	.4	1	ft andft Slot
Silty Sand Fill	Dk Gray	dense	1	3.9	Method of installation
					Source Pearl River Plant I Gradation 10/20
Organic Debris Fill	Black_	dense	3.9		Method of installation poured Composition SILICA Volume used 5.5 sacks Depth to top of fig. 2.5 ft
Sand Fill	Dk Gray	loose	8.3	11	Grout
Sand	Tan	med dns	11	26	Used? X Yes 1: No Volume used C Neat Cement 50 Bentonite
Sandy Fat Clay	Gray	soft	26		Method of installation Doured Depth from 0 ft to 1 ft
			•		fromft toft
					Development pumped 15 minutes
					Dates 3/23/87 Sand content after 1.0 m in 0
		1			Chemicals used None 10 III BT 0
		_			7.4
					Pumping Water I evel
		 			Specific Capacity N/A gpm/ft of drawdown at
			<u> </u>		D
					Date installed N/A Type
			1		Manufacturer
			-		Depth of pump intake setting
	 -	 	 	-	Material of drop pipe bowis
					shafting #mpellors Bowl dia Column pipe dia Length Modifications
					Well Head Completion
					Pitless adaptor Basement offset Distance above grade 2.5 ft
					Nearest Sources of Possible Contamination It Sire: hon
	 	<u> </u>	1	 	Welt disintected upon completion? Yes 'No
		ļ	1		Geophysical Logs Run
					No
Contractor Name and Address	·	.L		·	Water Quality
					Sample laren X Yes Where analyzed
Name of DrillerSouthwester	n Laborato	ries. I	nc.		3/23/87
State License Number					Date well completed

			Specific (gpm/ft of	Capacity drawdown
Problem	Corrective Action Taken	Date	Before	After
				,
			2	
_				
		-		
<u> </u>				
·				

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10068 CHARLESTON, S C 29411-0068

TECHNICAL OVERSIGHT BY____HI.A

WELL DATA REPORT

WELL NUMBER GPT - 5-1 AREA 5

DATE OF INSTALLATION 3/14/87

WELL HOLE DATA		•
Drill Date 3/14/87	Well Driller South	western Laboratories, Inc.
Depth of Boring 24 ft	Purpose of Boring_	Soil Sampling and Monitoring Well Installation
Drilling Method Hollow-stem auger	Mud Type	None
WATER LEVEL DATA (All measu	rements from top of	r casing)
Water Level 7.32 ft	Date of Measuremen	
DEVELOPMENT DATA		
Development Method Pumped		
Length of Time Developed 45 m	inutes	
LOCATION OF BOREHOLE INFOR	MATION	
Drillers Logx	Geophysical Log	
Physical Core_x	Cutting Samples	
Water Level Observations 7.3	6' on 3/30/87	
0.11.7.3.5		
DRILLED BY S.W. Labs	SCCWD:	
DEVELOPED BY HLA	SCCWD*	

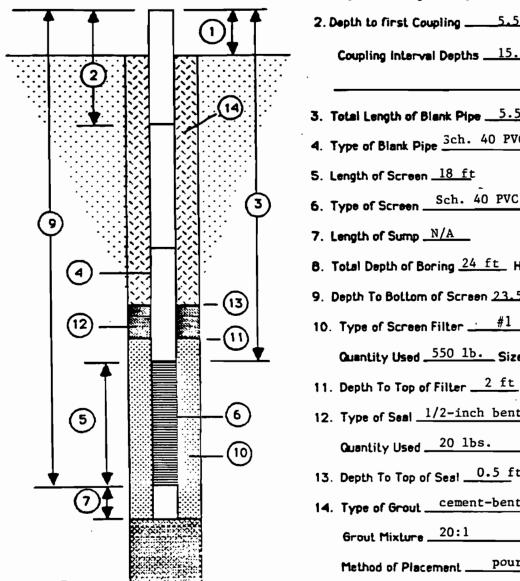
SOUTHERN DIVISION

AVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR., P. D BOX 10068 CHARLESTON S C 29411-0068

WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 5-1

DATE OF INSTALLATION _____3/14/87



_

2.5 ft

3.	Total Length of Blank Pipe5.5_ft
4.	Type of Blank Pipe 3ch. 40 PVC
5.	Length of Screen 18 ft

6.	Type of Screen _	Sch.	40	PVC,	0.020	slotted	
•	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						

B. Total Depth of Boring.	24	ft	Hole Diameter	6-3/4	<u>i</u> r.

9. Deput to bottom of Scr	5611 <u>2 12 7 1</u> L	
10. Type of Screen Filter.	. #1 sand	
10. 1770 0. 00. 00		

Quantity Used.	550	1ъ.	Size 10/20 U/C	

- 12. Type of Seal 1/2-inch bentonite pellets
- 13. Depth To Top of Seal 0.5 ft
- 14. Type of Grout ___cement-bentonite Grout Mixture 20:1 poured Method of Placement ___

COMMENTS ON INSTALLATION.

•			MP DATA				
Location of Well GPT - 5-1					Property owner's name and address		
County Harrison Township Numb		Section No. Fra	ction ST	E SE	NCBC Gulfport		
Toutiship 8	N 12 E	1 -	1	א א קריי	Gulfport, Mississippi		
	<u> </u>				,		
or Address and City or Distance and Direction from Road Intersections							
Show exact location of well in section gnd w	ith en 'x'	Sketch m	ap of well	location			
N					21 ft Ground Surface		
Addition No	ame :				Method of Drilling i Cable tool : Hollow rod : Driven ; Dug Drect rotary : Bucket auger ; HOLLOW		
					Direct rotary Air rotary Bucket auger MOLLOW Reverse rotary Jeffed Flight auger stem auger		
Block Num	ber				Use		
<u> </u>					Domestic Public supply Findustrial Figure Municipal Commercial		
Lot Numb	er				: Test Well Heating or cooling K Monitoring		
S L					Casing Type [Steel St Threaded Height above/batter(
1 mile					[1Galv C Welded surface 2.5 ft		
Remarks, Elevation, Source of Data, etc.					XPVC FI Solvent Drive shoe? Yes No Hole		
N 256718.91 E 403796.60	(MS State	Plane)			2 in to 3 ft Wg1 b/ft Sch No 40 6-3 n 4 to 4 t		
Elevation 29.57 ft (NGVI))				in to fi Wgt tb/fi Sch No in to f		
Borehole data			,		Screen type Schedule 40 or open hole from to fi		
Formation Log	Color	Hardness	From	To	Manufacturer Trilock Material PVC Dia Z Inches		
Silty Sand	Brown		0	20.7	Fittings Threaded Length 18 ft Set between 3 ft and 21 ft Slot 020		
Fat Clay	Blue Gray	med stf	20.7		ft and ft Slot		
					Method of installation		
					Fitter Pack Pearl River Plant I Gradation 10/20		
					Method of installation <u>poured</u> <u>Composition Silica</u> Volume used <u>5.5 sacks</u> Depth to top of fig. 2 ft		
	_		-	-	Grout		
					Used? X Yes (: No Volume used 2.5 gal		
	_			_	Method of installation		
					from ft to ft		
· _					Method pumped 45 min Duration Sang content after 10 m in 0		
					Dates 3/25/87 Sand content after 10 m in 0 Chemicals used None		
					Static Water Level 4.82 It X below C above grade		
					Date measured3/25/87		
					Pumping Water Level N/A It : below _ above grade Date		
	 -		-		gp.		
	<u>_</u>	ļ			Specific Capacity N/A gpm/ft of drawdown at		
					Date		
					Pump Date installed N/A Type		
					Manufacturer Model No HP Volts Capacity		
	-	1			Depth of pump intake setting No of stages		
					i Oil L Water lubrication Power source		
					shafting impellers Bowl dia Column pipe dia Length Modifications		
					Wall Meed Completion		
					Pitless adaptor Basement offset Distance above grade 2.6 ft		
		 			Nearest Sources of Possible Contamination It Sirection		
	ļ	 		-	Well disinfected upon completion? Yes No		
		<u> </u>			Geophysical Logs Run		
				_	.		
					No		
ntractor Name and Address					Water Quality Sample (see p. 28/es 1/4)		
					Sampe Garen Wes where analyzed JTC Environmental Consultants, Inc.		
Name of Dritter Southwestern	Laborator	ies Inc.					
Name of Drider South Western Daboratories Inc. State License Number					Date well completed3/25/87		

	•		Specific Capacity (gpm/ft of drawdow			
Problem	Corrective Action Taken	Date	Before	After		
-						
	·					
_						

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2195 EAGLE DR P O BOX 10068 CHARLESTON S C 29411-0068

WELL DATA REPORT

WELL NUMBERGPT - 5-2 AREA 5.

DATE OF INSTALLATION___3/15/87

WELL HOLE DATA Drill Date 3/15/87 Well Driller Southwestern Laboratories, Inc. Soil Sampling and Depth of Boring 19 ft Purpose of Boring Monitoring Well Installation Drilling Method Hollow-stem auger Mud Type None WATER LEVEL DATA (All measurements from top of casing) Water Level 5.39 ft Date of Measurement 3/25/87 DEVELOPMENT DATA Pumped Development Method__ Length of Time Developed 20 minutes LOCATION OF BOREHOLE INFORMATION Drillers Log Keophysical Log Geophysical Log Physical Core___X ____ Cutting Samples_____ Water Level Observations 5.27' on 3/30/87 DRILLED BY______S.W. Labs ______ SCCWD*_____ DEVELOPED BY HLA TECHNICAL OVERSIGHT BY HLA

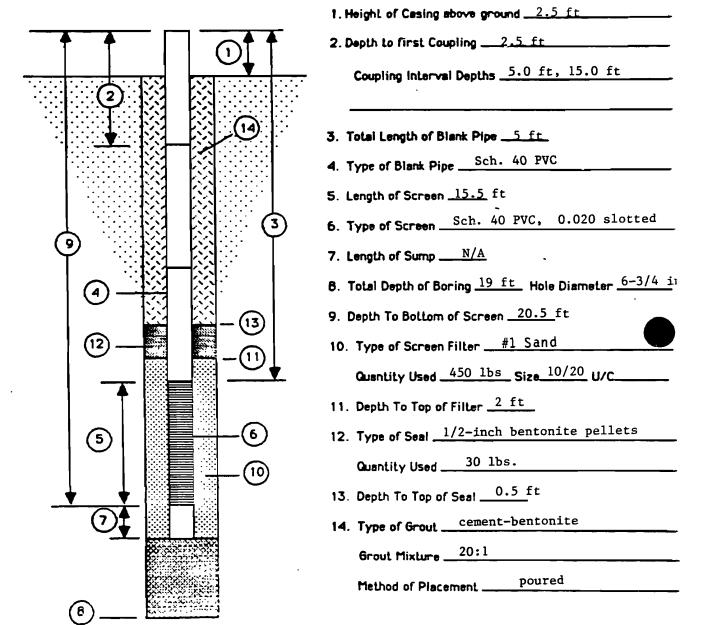
SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR., P. O. BOX 10068 CHARLESTON 5 C. 29411-0068

WELL CONSTRUCTION DETAILS

WELL NUMBER __GPT_ - 5-2

DATE OF INSTALLATION ____3/15/87__



WELL AND PUMP DATA

Location of Well GPT - 5-2					Property owner's name and address
Location of Well GPT - 5-2					Property owner a name and address
County Harrison Township Numb	per Range Number 1	Section No. Fre	CTO CT	CF	
	12 6	1 -		SE	NCBC Gulfport
	8 ¹² 8	1	_ •		Gulfport, Mississippi
et Address and City or Distance and Din	~ ~ ~	tersections			1
Show exact location of well in section and w		Shedob m	ap of well	location	Well depth Datum point from which all measurements are taken
	101 6 11 X	JACK!	-p 0. we.	1005001	18 ft Ground Surface
N CONTRACTOR					Method of Drilling
Addition No.	ime				i 'Cable tool Hollow rod Driven CDug
 					Direct rotary Air rotary Bucket auger WHO110W Reverse rotary Jetter Florit auger Stem auger
Block Num	ber				
					Domestic Public supply Frindustrial Fig.
Lot Numb					trigation Municipa: Commercial
- - - -	· ·				: Test Well ' Heating or cooling X Monitoring
s					Casing Type
1 mile					[Steel Marked Height above/88666 [Gaiv C Weided Surface 2.5 ft C C C C C C C C C
Remarks, Elevation, Source of Data, etc.		~ 1 · · · · ·			tiss welded
N 256708.02 E 404116.88	(MS State	Plane)			
Elevation 27.55 ft (NGVI	1)				tn to ft Wgt tb/ft Sch No in to '
	<u>''</u>				Intake Portion of Well
Borehole data					Screen type Schedule 40 or open hole fromft toft
Formation Log	Color	Hardness	From	То	Manufacturer Trilock Material PVC Dia 2 inches
Silty Sand	Brown	_	0	5.7	Fittings Threaded Length 15.5 ft
Billy Band			-		Set between 2 5 ft and 18 ft Slot
Sand	Dk Brown	_	5.7	17.5	ft and ft Slot
	Dlas Conse		17.5		Method of installation
Fat Clay	Blue Gray	soft	17.3		Filter Pack
					Source Pearl River Plant I Gradation 10/20
					Method of installation poured Composition silica Voiume used 4.5 sacks Depth to top of tip 2 ft
					Grout
					Used? CX Yes L: No Volume used
					□ Neat Cement
			ļ		Method of installation POIITEd Depth from ht to U.5 ht
		1			fromtt tott
	 				Development pumped 20 minutes
·					Method
			1		Dates 3/20/8/ Sand content after I U M In . U Chemicals used
	 			 	Static Water Level
					2.89 ft X below Dabove grade
			1		
	-			 	Pumping Water Level
					N/A ft below above grade Date gpm
				Į	
			 		Specific Capacity N/A gpm/t: of drawdown at
					Date
					Pump N/A
			-	-	Date installed
					H.P. Volts Capacity
					Depth of pump intake settingNo of stagesNo of stages
			├──		Material of drop pipebowls
			1		shafting mpelicrs Bowl dia
			 		Column pipe dia Length Modifications
			——		Well Head Completion Pilless adaptor Basement offset Distance above grade 2.5 ft
				$\overline{}$	Nearest Sources of Possible Contamination
					tt Eirection1ype1ype
					Geophysical Logs Run
			 		1
					No
Contractor Name and Address					Water Quality
I					Sample laven? Wes 'vo
					Where analyzedITC Environmental Laboratories, Inc.
Southwestern	Laborator	ies. Ind			
Name of DritterSOUTHWESTEIN			•		3/25/87
State License Number				Date well completed	

			Specific Capacity (gpm/ft of drawdowi		
Problem	Corrective Action Taken	Date	Before	After	
	-				
		·			
				<u> </u>	
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			•		
-					

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10068 CHARLESTON, 5 C 29411-0068

WELL DATA REPORT

WELL NUMBER GPT - 5-3 AREA 5

DATE OF INSTALLATION 3/15/87

WELL HOLE DATA		
Drill Date 3/15/87	Well DrillerSout	hwestern Laboratories, Inc.
		Soil Sampling and Monitoring Well Installation
Drilling Method Hollow-stem	^{auger} Mud Type	None
WATER LEVEL DATA (All m	neasurements from top of	
Water Level 8.95 ft	Date of Measureme	nt
DEVELOPMENT DATA		·
Development Method Pumpe	ed	
Length of Time Developed	30 minutes	
LOCATION OF BOREHOLE I	NFORMATION	
Drillers Logx	Geophysical Log	
Physical Corex	Cutting Samples	
Water Level Observations	9.47' on 3/30/87	
DRILLED BYS.W. Labs	SCCWD:	-
DEVELOPED BY_HLA	SCCWD	·
TECHNICAL OVERSIGHT BY	HLA	

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR.. P O BOX 10068 CHARLESTON 5 C 29411-0068

WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 5-3

DATE OF INSTALLATION __3/15/87

- 1. Height of Casing above ground 2.5 ft

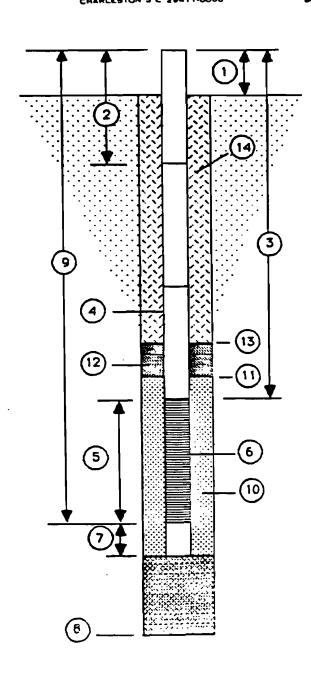
 2. Depth to first Coupling 4.0 ft

 Coupling Interval Depths 6.5 ft, 16.5 ft
- 3. Total Length of Blank Pipe $\underline{-6.5 \text{ f}}$ t
- 4. Type of Blank Pipe Sch. 40 PVC
- 5. Length of Screen 17 ft
- 6. Type of Screen Sch. 40 PVC, 0.020 slotted
- 7. Length of Sump N/A
- B. Total Depth of Boring $\frac{21.5 \text{ f}}{\text{t}}$ Hole Diameter $\frac{6-3/4 \text{ i}\pi}{\text{t}}$
- 9. Depth To Bollom of Screen 23.5 ft
- Quantity Used 400 1bs. Size 10/20 U/C
- 11. Depth To Top of Filter 2 ft
- 12. Type of Seal 1/2-inch bentonite pellets

 Quantity Used 25 lbs.
- 13. Depth To Top of Seal $\frac{0.3 \text{ ft}}{}$
- 14. Type of Grout _____cement-bentonite

 Grout Mixture _____20:1

 Method of Placement ____poured



COMMENTS ON INSTALLATION

WELL AND PUMP DATA

Location of Well GPT - 5-3					Property owner's name and address
County Township Numb	er Range Number	Section No. Fre	etton NT	CF	
- Harrison	Harrison N E NE SE		NCBC Gulfport		
	12	1 -	_ `	* *	Gulfport, Mississippi
et Address and City or Distance and Dire		tersections			
Show exact location of well in section grid wi	th en 'x'	Sketch m	ap of well	location	Weil depth 21 ft
N N N N N N N N N N N N N N N N N N N					Method of Dritting
Addition Na	me				i 'Cable tool : Hottow rod : Driven : 'Dug Direct rotary : Air rotary : Bucket auger X: Hollow
					Direct rotary Air rotary Bucket auger X-10110W Reverse rotary Jetted Flight auger stem auger
Biock Numi	per				Use
 + + + +					: Domestic : Public supply : Industrial ::
Lot Numb	ef .				Itrigation Municipal Commercial Commercial Test Welf Heating or cooking Monitoring
					Casing Type
S L					[i Steel
					I Galv
Remarks, Elevation, Source of Data, etc.					LISS weided diameter
N 257283.72 E 403384.58	(MS State	Plane)			2 in to 4 it Wg1 b/tt Sch No 40 6-3/14 to 21.1
71 20 02 5- (NOVID	`				in tot Wgttb/ft Sch No in tot
Elevation 30.82 ft (NGVD	<u>) </u>				Intake Portion of Well
		14	1		Screen type Schedule 40 or open hole from to ft Manufacturer Trilock
Formation Log	Color	Hardness	From	To	Material PVC Dia 2 inches
Clayey Sand	Brown		0	5.8	Fittings Threaded Length 17 ft Set between 4 ft and 21 ft Stot
	T & C		5.8	20	ft and It Slot
Sand	Lt Gray			20	Method of installation ft Slot
Fat Clay	Gray	soft	20		Pil 0 - 1.
1					Source Pearl River Plant I Gradation 10/20
					Method of installation <u>poured</u> Composition <u>silica</u> Volume used <u>4 sacks</u> Depth to top of fip 2
		<u> </u>		ļ	Grout
					Used? X Yes Li No Volume used 2.5 gal
	•				C Neat Cement x Bentonite
		 			Depth from the trop t
				-	Pevelopment # 10 # 10 # 1
					Method <u>pumped</u>
					Dates 3/25/87 Sand content after 10 m in 0
				 	Static Water Level
				Ļ	6.45 It Okbelow Cabove grade
					Date measured 3/25/87
			<u> </u>		Pumping Water Level NA fl . belowabove grade Cale
			 	 	After hrs pumping at gpm
					Specific Capacity N/A gpm/f: of drawdown al
					Date
					Pump N/A Tree
		-	-		Date installed N/A Type
					H PVolts Capacity
					Depth of pump intake setting
		+		\vdash	Material of drop pipebowls
		<u> </u>		<u> </u>	shafting mpeliors Bowlida Column pipe dia Lengtr: Modifications
					Well Head Completion
					Patiess adaptor Basement offset Distance above grade 2.5 ft
			-		Nearest Sources of Possible Contamination 11 Direction
					Well disinfected upon completion? Yes No
					Geophysical Logs Run
					1
		-			No
					110
Contractor Name and Address					Water Quality
					Sample taken? Xes to Where analyzedITC_Environmental Consultants, Inc.
		_			
Name of Driller Southwestern	<u>Laboratori</u>	es, Inc	<u> </u>		3/25/87
State License Number					Date well completed

			Specific (gpm/ft of	Capacity
Problem	Corrective Action Taken	Date	Before	After
_				
· · · · · · · · · · · · · · · · · · ·				
		.		
			· · · · · · · · · · · · · · · · · · ·	
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			-	
		7		

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10066 CHARLESTON S C 29411-0068

WELL DATA REPORT

WELL NUMBER GPT - 6-1 AREA 6

DATE OF INSTALLATION___3/17/87

WELL HOLE DATA

Drill Date 3/1//8/	Well Driller South	western Laboratories, Inc.						
Depth of Boring 29.5 ft		Soil Sampling and Monitoring Well Installation						
Drilling Method_Hollow-stem auge	^r Mud Type	None						
WATER LEVEL DATA (All measurements from top of casing)								
Water Level 6.0 ft	Date of Measuremen	nt3/24/87						
DEVELOPMENT DATA								
Development MethodPump	ed							
Length of Time Developed 15 m	ninutes							
LOCATION OF BOREHOLE INFO	RMATION							
Drillers Logx	Geophysical Log							
Physical Corex	Cutting Samples							
Water Level Observations	6.89' on 3/30/87							
		_						
DRILLED BY S.W. Labs	SCCWD ^a							
DEVELOPED BY	5CCWD*	·						
TECHNICAL OVERSIGHT BY HLA	1							

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2135 EAGLE DR., P. O. BOX 10068 CHARLESTON S. C. 29411-0068

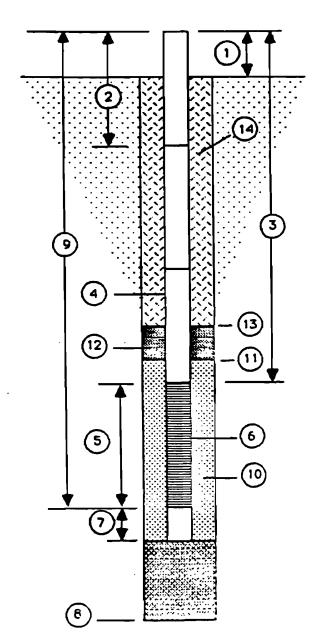
WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 6-1

DATE OF INSTALLATION 3/17/87



2.5 ft



I. Height of Casing above grou	uno
2. Depth to first Coupling	5.5 ft
Coupling Interval Depths	
·	·-

3. Total Length of Blank Pipe 5.5 ft
4. Type of Blank Pipe Schedule 40 PVC
5. Length of Screen 24.5 ft
6. Type of Screen Sch. 40 PVC, 0.020 slotted
7. Length of Sump N/A
8. Total Depth of Boring $\frac{29.5 \text{ ft}}{\text{Hole Diameter}} = \frac{6-3/4 \text{ in}}{6-3/4 \text{ ft}}$
9. Depth To Boltom of Screen 30.0 ft
10. Type of Screen Filter # 1 sand
Quantity Used 550 lbs. Size 10/20 U/C
11. Depth To Top of Filter 2.5 ft
12. Type of Seal 1/2-inch bentonite pellets

25 pounds

Quantity Used _____

•			WELL A	ND PU	MP DATA			
atton of Well GPT - 6-1					Property owner's name	and address		
Harrison Township		oction No. Pro	NW	SW				
**** 8		6 -	- ""	W W	NCBC Gulfpor	:t		
hAddress and City or Distance and	<u> </u>				Gulfport, Mi			
	a Dadedou nom Hone un	3130C00113						
ect location of well in section g	rid with an 'x'	Sketch m	ap of well	location	Well depth 29.5 ft	Detum point from which		ts are taken
N Addition	on Name				Method of Drilling	· Hollow rod :	*Driven	110
					· Direct rotary	Air rotary	Bucket auger	(≀Dug K- <u>Hollo</u> w
Block	Number				L'Reverse rotary Use	· Jeffed ·	:Flight auger	stem auger
┍╵╀╎╃╎┼╵┩					! Domestic	* Public supply [·Industrial	11
Lot N	lumber			•	trigation : Test Welf		Commercial y Monitoring	
<u></u>					Casing Type	•		
1 mile	•				EiSteel DXThr E1Galv □ We	eaded Height abo	ve/ cessx 2.5 ft	
verks, Elevetion, Source of Data, etc					ZEPVC FISH		7 Yes No	Hole
₹ 257302.20 E 40455		e Plane	·)			<u>3</u> f1 Wg1	10/11 Sch No 40	<u>6-374729.</u>
Elevation 31.73 ft (•		•		in to	ft Wg1 ft Wgt	.lb/ft Sch No .lb/ft Sch No	
ehole data	MGAD)				Intake Portion of Well . Screen type Schedi	.10 40	-	
Formation Log	Color	Hardness	From	То	Screen type SCHEOL Manufacturer Trilo	ck ~	open hale from	ff
					- Material <u>PVC</u>	Threaded	De2	inches 24.5
Sand	Tan & Ornge		0	0.5	Set between	t and 27.5 tt Sid t andtt Sid		
Silty Sand	Dk Brown		0.5	-	;	t and ft Sid		
Silty Sand	Tan & Gray	dense	1	27.5	Method of installation	D1 T	1.6	
Fat Clay	Gray	soft	27.5		Filter Pack ear1 R	poured	Gradation10	0/20 silica
					Volume used5.5_	sacks	Depth to top of	
					Grout Used? 3K Yes L: No	Valume used 2.5	gal	
	_		 		Neat Cement S Method of installation	*Bentonite		
			<u> </u>	-	Depth from 0	ft to ft to _	0.5	
		1		<u> </u>	Downloamant		11	
			<u> </u>	ļ <u>.</u>	Method	mped	Duration Sand content a	minutes
					Chemicals used	none		tte 5 m in 0
					Static Water Level	IX below ⊡ above grad	te	
						% below ⊡above grad 124/87		
	_				Pumping Water Level	below _ above grade	Date	_
					Aller	is pumping at		gpr
			<u> </u>	 	Specific Capacity N	/A gpm/fi of dra	mason at	hours
			ļ	<u> </u>	Date			
					Date installed			
·					Manufacturer	Volts !	Model No	
				†	Depth of pump intake se	tting	No of stages	· -
			-		i" Oil : Water lubricate Material of drop pipe		bowis	_
					shalting	impeliers Bo	wida _	
					Well Head Completion			
				†	Pitless adaptor Ba	isement offset. Distance	ahove grade2	.5 ft
		 		 	- Nearest Sources of Po		Type	
				 		impletion? Yes No)	
					Geophysical Logs Run			
					No			
stractor Name and Address			-	<u> </u>	Water Quality	-		_
					Sample faren? Xvec. Xvec.	TC Environmen	tal Consu	ltants, Inc
Southwest	ern Taborator	ies. Ind	.					

3/24/87

State License Number

			Specific (gpm/ft of	Specific (gpm/ft of		
Problem	Corrective Action Taken	Date	Before			
		_		-		
		•		<u> </u>		
				!		
						
				_		
				 		
				-		
				 		
		1				
				+		
	<u></u>	<u> </u>	<u> </u>			

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR P O BOX 10068 CHARLESTON S C 29411-0068

WELL DATA REPORT

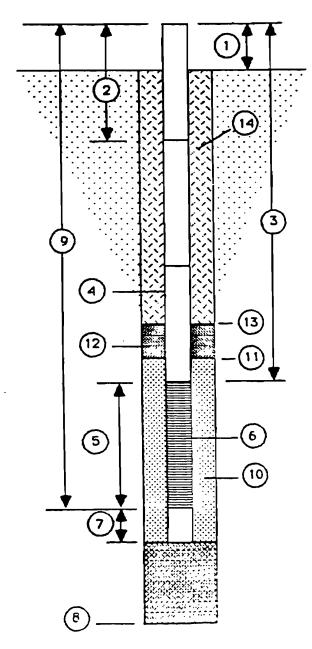
WELL NUMBER GPT - 6-2 AREA 6

DATE OF INSTALLATION 3/17/87

WELL HOLE DAT	ΓA			
Drill Date3	/17/87	Well Driller_So	uthwestern Laboratorio	es, Inc.
			Soil Sampling and Monitoring Well In	
Drilling Method_	Hollow-stem aug	^{er} Mud Type	None	
WATER LEVEL	DATA (All meas	surements from top	o of casing)	
Water Level6	.65	Date of Measure	3/24/87 ment	·. —
DEVELOPMENT	DATA			
Development Me	thod Pumped			_
Length of Time I	Developed30	minutes		
LOCATION OF I	BOREHOLE INFO	RMATION		
Drillers Log	Х	Geophysical Log		
Physical Core	<u> </u>	Cutting Samples.		_
Water Level Obs	servations	6.72' on 3/30/87		
DDII ED BV	S. W. Labs	SCC	₩D*	
DEVELOPED BY_	HLA	SCC\	wD#	_
TECHNICAL OVE	RSIGHT BYHI	LA		

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2135 EAGLE DR., P.O. BOX 10068 CHARLESTON 5 C 29411-0068



WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 6-2

DATE OF INSTALLATION 3/17/87

- 1. Height of Casing above ground 2.5 ft
- 3. Total Length of Blank Pipe $\underline{5.5~\mathrm{ft}}$
- 4. Type of Blank Pipe Schedule 40 PVC
- 5. Length of Screen 19 ft
- 6. Type of Screen Sch. 40 PVC, 0.020 slotte
- 7. Length of Sump $\frac{N/A}{}$
- 8. Total Depth of Boring $\frac{23 \text{ ft}}{}$ Hole Diameter $\frac{6-3}{}$
- 9. Depth To Bottom of Screen 24.5 ft
- 11. Depth To Top of Filter $\frac{2.5 \text{ ft}}{}$
- 12. Type of Seal 1/2-inch bentonite pellets

 Quantity Used 30 lbs.
- 13. Depth To Top of Seal 0.5 ft
- 14. Type of Grout _____cement-bentonite

 Grout Mixture ____20:1

 Method of Placement _____poured

COMMENTS ON INSTALLATION

•			WELL A	ND PU	MP DATA
GPT - 6-2					Property owner's name and address
Township No.	mber Renge Number	Section No. Pre	ction		NCDC Culfront
Harrison	N E	6 -	NW	I SW	NCBC Gulfport Gulfport, Mississippi
	<u>© 11 @</u>				
Address and City or Distance and C	Direction from Road II	ntersections			
ow exact location of well in section grid	with an 'v'	Sketch m	ap of well	location	Well depth Datum point from which all measurements are taken
N	WILLIAM A		-p 0. we.		23 ft Ground Surface
Addition	Name				Method of Drilling ['Cable tool : Hollow rod : 'Driven ; Dug
 					Direct rotary : Air rotary : Bucket auger & Holl
Block No	ımber				Powerse rotary Jetted Flight anger Stem aug
F + + + + -					! Domestic Public supply [Industrial []
Lot Nu	nber				Irrigation Municipal Commercial Test Well Heating or cooling XMonitoring
S Lilia					Casing Type
1 mile					[Steel X Threaded Height above 78 5 ft
emarks, Elevation, Source of Data, etc.		-			CXPVC F1Solvent Drive shoe? Yes No Hole
257302.82 E 404643.	28 (MS State	Plane)			$\frac{2}{100}$ in to $\frac{3}{100}$ it Wg1 tb/ft Sch No $\frac{40}{100}$ $\frac{6-3}{100}$ ft to.
					in toif Wgtlb/ft Sch Noin toin toin to
levation 31.91 ft (NG	לעע				Intake Portion of Well
Formation Log	Color	Hardness	From	То	Screen type Schedule 40 or open hole from to Manufacturer Trilock
Topsoil	Brown		0	0.3	Material PVC Dia Zinches
	-	1 1			Set between 3 tt and 23 tt Siot .020
Clayey Sand	Tan	med dns	0.3	5.2	ft andft Slot
Sand	Tan & Brwn	med dns	5.2	23	Method of installation
Fat Clay	Gray	soft	23		Filter Pack Source Pearl River Plant I Gradation 10/20 Method of installation Doured Composition Silica
					Method of installation <u>poured</u> Composition <u>silica</u> Volume used <u>2.5 sacks</u> Depth to top of tip <u>2.5 ft</u>
		 			Grout
	<u> </u>		 		Used? X Yes Li No Volume used
		ļ	ļ		Method of installation <u>poured</u> Depth from <u>0</u> it to <u>0.5</u>
					from ft to
					Development pumped Duration 30 minutes
			_		Dates 3/24/87 Sand content after 10 m in
			 		Statur Water Level
			-		4.15 tt X below C above grade Date measured 3/24/87
					Pumping Water Level
					N/A ft below above grade Date
		1			
		1		 	Specific Capacity N/A gpm/ft of drawdown at
	-	-	-	 	Dura-
					Date installed N/A Type
					Manufacturer
	-	-	-	+	Material of drop pipe, bowls
	1	-			shafting impeliers Bowl dia Column pipe dia Length Modifications
		1			Well Head Completion
					Pilless adaptor Basement offset Distance above grade 2.5 ft
					None of Courses of Departure Containing
					Nearest Sources of Possible Contamination
					Well disinfected upon completion? Yes No
					## The Chirection ## Type ## Well disinfected upon completion? Yes No
					## The Chirection ## Type ## Well disinfected upon completion? Yes No

3/24/87

Date well completed ____

Name of Druler Southwestern Laboratories, Inc.

State License Number

			Speci (gpm/tt	Specific Capa (gpm/ft of		
Problem	Corrective Action Taken	Date	Before			
				- 		
		-				
· · · · · · · · · · · · · · · · · · ·						
			-			
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SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR. P. O. BOX 10068 CHARLESTON, S. C. 29411-0068

WELL DATA REPORT

WELL NUMBER GPT - 6-3 AREA 6

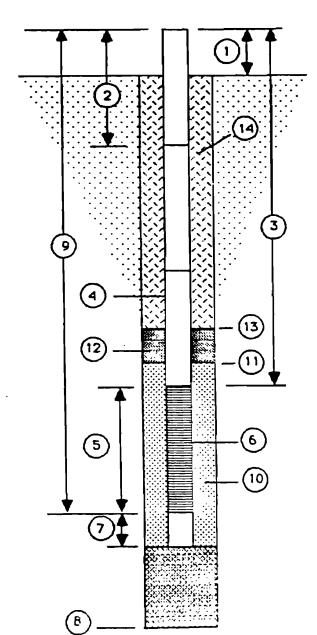
DATE OF INSTALLATION 3/16/87

WELL HOLE DATA

Drill Date3/16/87	Well Driller South	vestern Laboratories, Inc.
Depth of Boring 24 ft	Purpose of Boring_	Soil Sampling and Monitoring Well Installation
Drilling Method Hollow-stem auge		
WATER LEVEL DATA (All meas	urements from top of	•
Water Level 4.0 ft	Date of Measuremen	3/23/87 nt
DEVELOPMENT DATA		
Development Method Pumped	l	
Length of Time Developed 15	minutes	
LOCATION OF BOREHOLE INFO	RMATION	
Drillers Logx	Geophysical Log	
Physical Corex	Cutting Samples	
Water Level Observations		
DRILLED BYS.W. Labs	SCCWD:	F
DEVELOPED BY HLA	SCCWD*	e
TECHNICAL OVERSIGHT BY H	LA	

SOUTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND 2155 EAGLE DR., P. O BOX 10068 CHARLESTON 5 C 29411-0068



WELL CONSTRUCTION DETAILS

WELL NUMBER GPT - 6-3

DATE OF INSTALLATION 3/16/87

- 1. Height of Casing above ground 2.1 ft
- 2. Depth to first Coupling 5.1 ft

 Coupling Interval Depths 15.1 ft
- 3. Total Length of Blank Pipe __5.1_ft
- 4. Type of Blank Pipe Schedule 40 PVC
- 5. Length of Screen 19 ft
- 6. Type of Screen Schedule 40 PVC, .020 slott
- 7. Length of Sump N/A
- 8. Total Depth of Boring 24 ft Hole Diameter 6-3
- 9. Depth To Bollom of Screen 24.1 ft
- Ouentity Used 500 bs Size 10/20 U/C
- 11. Depth To Top of Filter 2 ft
- 12. Type of Seal 1/2-inch bentonite pellets

 Quantity Used 25 lbs.
- 13. Depth To Top of Seal $\frac{0.5 \text{ ft}}{}$
- 14. Type of Grout ______cement-bentonite

 Grout Mixture _____20:1

Method of Placement ____poured

COMMENTS ON INSTALLATION.

<u>•</u>			WELL A	AND PU	MP DATA
CPT - 6-3					Property owner's name and address
Harrison Township Num		iection No. Fra	NT.	C1.7	
witiship 8	11 2	6 -		SW	NCBC Gulfport
Address and City or Distance and Dis	S @	tersections	L_		Gulfport, Mississippi
Service and San Distance and San	ecoon non nose an				
now exact location of well in section grid v	vith an 'x'	Sketch m	ap of well	location	Well depth Datum point from which all measurements are taken
N The state of the					22 ft Ground Surtace
Addition N					Cable tool Hollow rod Driven Dug
Lot Num	ber				: Test Well Heating or cooling (XMonitoring
S 1 mile					Casing Type () Steel ☑ Threaded Height above/Dessal.
					[] Galv
#marks, Elevation, Source of Data, etc. 1 257369.86 E 404501.0	2 (MS State	Plane)			1 1 1 1 1 1 1 1 1 1
Elevation 28.27 ft (NGV	D)			_	in toft Wgtlb/ft Sch No in to
rehole data					Screen type Schedule 40 or open hole from to to
Formation Log	Color	Hardness	From	То	Manufacturer Trilock Malerial PVC Dia 2 inches
Topsoil	Brown		0	.3	Set between 3 ft and 22 ft Slot 020
Sand	Tan & Brown	1oose	.3	22	ft and ft Slot
Fat Clay	Gray	soft	22		Method of installation
					Filter Pack Source Pearl River Plant Gradation 10/20
				 	Method of installation poured Composition SILICA Volume used 5 sacks Depth to top of fp 2 tt
	<u> </u>				Grout Used? X yes (: No Volume used 2.5 gal
	 		ļ		C Neat Cement & Bentonite C.
	<u> </u>				Method of installation
					fromft toft
					Development pumped 15 minutes Method Duration 2 Dates 3/23/87 Sand content after 5 with 0
					Dates 3/23/87 Sand content after 5 m in 0
					Static Water Level
	 				1 9 the St below □ above grade Date measured 3/23/87
	-			 	Pumping Water Level N/A 11: belowabove grade Date
		 		 	After hrs pumping at gpi
		_			Specific Capacity N/A gpm/fi of drawdown at hours
		<u> </u>			Date
					Pump Date installedN/AType
					Manufacturer
					Depth of pump intake settingNo_ of stages i: Oil: L. Water lubrication: Power source
	-				Material of drop pipe
-	 	 	-		Column pipe dia Length Modifications
	-	 	 		Well Head Completion Pilless adoptor Basement offset Distance above grade 2.5 ft
		_			Nearest Sources of Possible Contamination
					It Direction 1; pe
				<u></u>	Geophysical Logs Run
					No
					1
ntractor Name and Address			٠	4	Water Quality
					Sampe date of West Where analyzed JTC Environmental Consultants, Inc.
Southwester	n Laborato	ries. Tr	nc -		
Name of Uriller					3/23/87
State License Number					Date well completed

			Speci (gpm/ft	Specific Caper (gpm/ft of		
Problem	Corrective Action Taken	Date	Before			
				_		
		-				
				_		
•						
				_		
		<u> </u>		_		
	·					
				_		
						
			<u> </u>			

APPENDIX D

Chemical Analysis Results

JTC DATA REPORT 87-147

RESULTS OF ANALYSES ON

WATER AND SOIL SAMPLES FROM

NCBC, GULFPORT, MISSISSIPPI

Prepared For:

HARDING, LAWSON ASSOCIATES
6220 WESTPARK DRIVE
SUITE 100
HOUSTON, TEXAS 77057

Prepared By:

JTC ENVIRONMENTAL CONSULTANTS, INC. 4 RESEARCH PLACE, SUITE L-10 ROCKVILLE, MARYLAND 20850

MAY 1, 1987

RESULTS OF ACID/BASE NEUTRAL ANALYSES ON WATER SAMPLES FROM

NCBC GULFPORT, MISSISSIPPI

Prepared For:

HARDING, LAWSON ASSOCIATES 6220 WESTPARK DRIVE HOUSTON, TEXAS 77057

Prepared By:

JTC ENVIRONMENTAL CONSULTANTS, INC. 4 RESEARCH PLACE, SUITE L-10 ROCKVILLE, MARYLAND 20850

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 2
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 3
      Results of Analyses For Miscellaneous Parameters on Water Samples
 4
      Results of Analyses For Miscellaneous Parameters on Soil Samples
 5
      Results of Analyses For Miscellaneous Parameters on Optional Soi
      Samples
 6
      Results of Volatile Organic Analyses on Water Samples
 7
      Results of Volatile Organic Analyses on Water Samples
 8
      Results of Volatile Organic Analyses on Water Samples
 9
      Results of Volatile Organic Analyses on Water Samples
10
      Results of Volatile Organic Analyses on Water Samples
11
      Results of Volatile Organic Analyses on Water Samples
12
      Results of Volatile Organic Analyses on Water Samples
13
      Results of Volatile Organic Analyses on Water Samples
14
      Results of Volatile Organic Analyses on Water Samples
15
      Results of Volatile Organic Analyses on Water Samples
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RESULTS OF ANALYSES ON SURFACE WATER SAMPLES JTC DATA REPORT 87-147

JTC ID	HLA ID	рН	Specific Conductance umhos	COD mg/l	TOC mg/l	TOX ug/l	O & (
87-0264	Site 1: N Catfish Pond	7.10	48	17	6	73	1.2
87-0264						73	
87-0267	Site 1: S Catfish Pond	9.41	62	47	6	33	1.0
87-0266	Site l: W Drainage Ditch	6.46	110	22	6	42	1.4
87-0265	Site 1: Ditch S.W. Bldg. 139	7.18	390	37	10	228	<1.0
87-0242							
87-0242	Drainage Ditch Dupl.	7.52 7.48	200 200	40 35	10	73 	1.5
87-0340							
87-0340	Drainage Ditch Dupl.	6.06 	92 	28 	8	29 · 	2.1 2.2
87-0341					_		
87-0341	Canal # 1 Dupl.	6.60 	120	20 	7 	60 60	3.0
87-0342	Site 5: S						
07 00 10	Drainage Ditch	6.50	140	< 5	6	327	1.3
87-0342	Dupl.			<5			

RESULTS OF ANALYSES ON GROUND WATER SAMPLES

JTC DATA REPORT 87-147

JTC ID	HLA ID	PH	SPECIFIC CONDUCTANCE umhos
87-0249	Well #1	8.69	500
87-0249 Dup.			500
87-0250	Well #2	9.03	220
87-0251	Well #3	8.30	190
87-0252	Well #4	8.88	190
87-0253	Well #5	8.00	190
87-0261	GPT 1-1	5.61	100
87-0262	GPT 1-2	5.25	90
87-0263	GPT 1-3	5.73	120
87-0268	GPT 2-1	6.42	160
87-0269	GPT 2-2	5.66	120
87-0270	GPT 2-3	5.61	440
87-0271	GPT 3-1	5.75	140
87-027 2	GPT 3-2	4.66	140
87-0273	GPT 3-3	5.41	80
87-0274	GPT 4-1	5.58	370
87-0274 Dup.			370
87-0275	GPT 4-2	6.75	210
87-0343	GPT 4-3	7.05	1600
87-0277	GPT 5-1	6.19	72
87-0278	GPT 5-2	5.66	80
87-0279	GPT 5-3	5.42	100 .
87-0344	GPT 6-1	5.23	80
87-0344 Dup.		5.21	
87-0281	GPT 6-2	5.44	90
87-0282	GPT-6-3	5.10	110

RESULTS OF ANALYSES ON DECON WATER SAMPLES

JTC DATA REPORT 87-147

JTC ID	HLA ID	Нд	Specific Conductance umhos	COD mg/l	TOC mg/l	O & G mg/l	TOX ug/3
87-0283	Decon 1	8.83	490	24	3	1.5	7
87-0284	Decon 2	5.85	6	19	<1	1.7	11
87-0284 D	oupl.	5.89				1.8	

RESULTS OF ANALYSES ON SOIL SAMPLES

JTC DATA REPORT 87-147

JTC ID	HLA ID	рН	COD mg/kg	TOC mg/kg	TOX mg/kg	O & G mg/kg
87-0286	Site 1: N Catfish Pond	5.84	2,670	1,000	260	<131
87-0286 Dup	1.				****	<131
87-0287	Site 1: S Catfish Pond	5.79	2,190	1,900	210	<134
87-0288	Site 1: W Drainage Ditch	6.15	5,480	6,400	280	366
87-0289	Site 1: Ditch SW Bldg. 139	5.44	3,530	4,200	150	<122
87-0289 Dup	1.	5.49	3,180	~=-	160	
87-0244	Site 2: S Drainage Ditch	5.80	8,240	2,800	300	<123
87-0257	Site 4: Canal # 1	6.31	5,140	30,000	340	442
87-0257 Dup	1.					422
87-0258	Site 5: S Drainage Ditch	5.12	1,530	1,800	280	301
87-0258 Dup	1.	5.09	1,650		250	
87-0246	Site 6: W Drainage Ditch	5.26	3,800	5,500	<200	<132
87-0247	Site 6: W of S. Pit	6.95	9,450	11,800	210	7,248
87-0248 Dup	Site 6: W of N. Pit l.	5.75 5.70	3,770 3,750	5,100	380 370	135

RESULTS OF ANALYSES ON SOIL SAMPLE

JTC DATA REPORT 87-147

TABLE 4 A

JTC ID	HLA ID	рН	COD mg/kg	TOC mg/kg	TOX mg/kg	O & G mg/kg	Cd mg/kg	Cr mg/kg	Pb mg/kc
87-0392	Site 3: South Drainage Ditch	4.76	1450	4800	<200 3	<123	<2.9	5.0	6.8
87-0392 Dupl.	Site #: South Drainage Ditch	4.78	1280		<200	<123			

TABLE 6

VOLATILE ORGANICS	CONCENTRAT	ION (UG/L)	DETECTION LIMIT (UG/L)
HLA ID: JTC ID:	Well #1 87-0249	Well #2 87-0250	
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	BDL	BDL	5
BROMOFORM	BDL	BDL	5
BROMOMETHANE	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	5
CHLOROBENZENE	∍ BDL	BDL	5
CHLORODIBROMOMETHANE	\mathtt{BDL}	BDL	5
CHLOROETHANE	\mathtt{BDL}	BDL	10
CHLOROMETHANE	\mathtt{BDL}	BDL	10
2-CHLOROETHYLVINYL ETHER	BDL	BDL	10
CHLOROFORM	\mathtt{BDL}	BDL	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
DICHLOROBROMOMETHANE	\mathtt{BDL}	BDL	5
1,1-DICHLOROETHANE	BDL	BDL	5
1,2-DICHLOROETHANE	BDL	BDL	5
1,1-DICHLOROETHYLENE	BDL	BDL	5
1,2-DICHLOROPROPANE	BDL	BDL	5
TRANS-1,3-DICHLOROPROPENE	BDL	BDL	5
ETHYLBENZENE	BDL	BDL	5
METHYLENE CHLORIDE	BDL	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	BDL	5
TETRACHLOROETHYLENE	BDL _	BDL	5 .
TOLUENE	7	7	5
1,2-TRANS-DICHLOROETHYLENE	BDL	BDL	5
1,1,1-TRICHLOROETHANE	BDL	BDL	5
1,1,2-TRICHLOROETHANE	BDL	BDL	5
TRICHLOROETHYLENE	BDL	BDL	_
TRICHLOROFLUOROMETHANE	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL	BDL	10

TABLE 7

VOLATILE ORGANICS	CONCENTRAT	ION (UG/L)	DETECTION LIMIT (UG/L)
HLA ID: JTC ID:	Well #3 87-0251	Well #4 87-0252	
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	BDL	BDL	5
BROMOFORM	BDL	BDL	5
BROMOMETHANE	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	5
CHLOROBENZENE	BDL	BDL	5
CHLORODIBROMOMETHANE	BDL	BDL	5
CHLOROETHANE	BDL	BDL	10
CHLOROMETHANE	\mathtt{BDL}	BDL	10
2-CHLOROETHYLVINYL ETHER	BDL	BDL	10
CHLOROFORM	BDL	BDL	5
DICHLOROBROMOMETHANE	BDL	BDL	5
1,1-DICHLOROETHANE	BDL	BDL	5
1,2-DICHLOROETHANE	BDL	BDL	5
1,1-DICHLOROETHYLENE	BDL	BDL	5
1,2-DICHLOROPROPANE	BDL	BDL	5
TRANS-1, 3-DICHLOROPROPENE	BDL	BDL	5
ETHYLBENZENE	BDL	BDL	5 5 5 5 5
METHYLENE CHLORIDE	BDL	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	BDL	5 5 .
TETRACHLOROETHYLENE	BDL 11	BDL	5 . 5
TOLUENE 1,2-TRANS-DICHLOROETHYLENE	BDL	10 BDL	5 5
1,1,1-TRICHLOROETHANE	BDL	BDL	
1,1,2-TRICHLOROETHANL	BDL	BDL	5 5
TRICHLOROETHYLENE	BDL		5
TRICHLOROEIHILENE TRICHLOROFLUOROMETHANE	BDL	BDL BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL	BDL	10

TABLE 8

VOLATILE ORGANICS	CONCENTRATI	ION (UG/L)	DETECTION LIMIT (UG/L)
HLA ID:		GPT 1-1	
JTC ID:	87-0253	87-0261	
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	BDL	BDL	5
BROMOFORM	\mathtt{BDL}	BDL	5
BROMOMETHANE	\mathtt{BDL}	BDL	10
CARBON TETRACHLORIDE	\mathtt{BDL}	BDL	5
CHLOROBENZENE	BDL	BDL	5
CHLORODIBROMOMETHANE	\mathtt{BDL}	BDL	5
CHLOROETHANE	BDL	BDL	10
CHLOROMETHANE	BDL	BDL	10
2-CHLOROETHYLVINYL ETHER	BDL	BDL	10
CHLOROFORM	BDL	BDL	5
DICHLOROBROMOMETHANE	BDL	BDL	5
1,1-DICHLOROETHANE	BDL	BDL	5
1,2-DICHLOROETHANE	BDL	BDL	5
1,1-DICHLOROETHYLENE	BDL	BDL	5
1,2-DICHLOROPROPANE	BDL	BDL	5
TRANS-1, 3-DICHLOROPROPENE	BDL	BDL	5
ETHYLBENZENE	BDL	BDL	5
METHYLENE CHLORIDE	BDL	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	BDL	5
TETRACHLOROETHYLENE	BDL	BDL	5 ·
TOLUENE	6	BDL	5
1,2-TRANS-DICHLOROETHYLENE	BDL	BDL	5
1,1,1-TRICHLOROETHANE	BDL	BDL	5
1,1,2-TRICHLOROETHANE	BDL	BDL	5
TRICHLOROETHYLENE	BDL	BDL	5
TRICHLOROFLUOROMETHANE	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL .	BDL	10

TABLE 9

VOLATILE ORGANICS	CONCENTRATI	ON (UG/L)	DETECTION LIMIT (UG/L)
HLA ID: JTC ID:	GPT 1-2 87-0262	GPT 1-3 87-0263	
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	BDL	BDL	5
BROMOFORM	BDL	BDL	5
BROMOMETHANE	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	5
CHLOROBENZENE	BDL	BDL ?	5
CHLORODI BROMOMETHANE	BDL	BDL	5
CHLOROETHANE	BDL	BDL	10
CHLOROMETHANE	BDL	BDL	10
2-CHLOROETHYLVINYL ETHER	BDL	BDL	10
CHLOROFORM	BDL	BDL	5
DICHLOROBROMOMETHANE	BDL	BDL	5
1,1-DICHLOROETHANE	BDL	BDL	5 5 5 5 5 5
1,2-DICHLOROETHANE	BDL	BDL	5
1,1-DICHLOROETHYLENE	BDL	BDL	5
1,2-DICHLOROPROPANE	BDL	BDL	5
TRANS-1, 3-DICHLOROPROPENE	BDL	BDL	5
ETHYLBENZENE	BDL	BDL	5
METHYLENE CHLORIDE	BDL	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	BDL	5 5 ·
TETRACHLOROETHYLENE	BDL	BDL	5 .
TOLUENE	BDL	BDL	5 5 5 5
1,2-TRANS-DICHLOROETHYLENE	BDL	BDL	5
1,1,1-TRICHLOROETHANE	BDL	BDL	5
1,1,2-TRICHLOROETHANE	BDL	BDL	5
TRICHLOROETHYLENE	BDL	BDL	5
TRICHLOROFLUOROMETHANE	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL	BDL	10

TABLE 10

	TABLE TO		DETECTION LIMIT
VOLATILE ORGANICS	CONCENTRAT	ION (UG/L)	(UG/L)
HLA ID: JTC ID:	GPT 2-1 87-0268	GPT 2-2 87-0269	
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	BDL	BDL	5
BROMOFORM	BDL	BDL	5
BROMOMETHANE	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	5
CHLOROBENZENE	BDL	BDL	5
CHLORODIBROMOMETHANE	BDL	BDL	5
CHLOROETHANE	BDL	BDL	10
CHLOROMETHANE	BDL	BDL	10
2-CHLOROETHYLVINYL ETHER	BDL	BDL	10
CHLOROFORM	BDL	BDL	5
DICHLOROBROMOMETHANE	BDL	BDL	5 5
1,1-DICHLOROETHANE	BDL	BDL	5
1,2-DICHLOROETHANE	BDL	BDL	5
1,1-DICHLOROETHYLENE	BDL	BDL	5
1,2-DICHLOROPROPANE	BDL	BDL	5
TRANS-1,3-DICHLOROPROPENE	BDL	BDL	5
ETHYLBENZENE	BDL	BDL	5 5 5 5 5 5
METHYLENE CHLORIDE	BDL	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	BDL	
TETRACHLOROETHYL ENE	BDL	BDL	5 5 5 5 5
TOLUENE	BDL	BDL	5
1,2-TRANS-DICHLOROETHYLENE	BDL	BDL	5
1,1,1-TRICHLOROETHANE	BDL	BDL	5
1,1,2-TRICHLOROETHANE	BDL	BDL	5
TRICHLOROETHYLENE	BDL	BDL	
TRICHLOROFLUOROMETHANE	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL	BDL	10

BDL = BELOW DETECTION LIMIT

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TABLE 11

VOLATILE ORGANICS	CONCENTRATI	ON (UG/L)	DETECTION LIMIT (UG/L)
HLA ID: JTC ID:	GPT 2-3 87-0270	GPT 3-1 87-0271	
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	BDL	BDL	5
BROMOFORM	BDL	BDL	5
BROMOMETHANE	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	5
CHLOROBENZENE	BDL	BDL	5
CHLORODI BROMOME THANE	BDL	BDL	5
CHLOROETHANE	BDL	BDL	10
CHLOROMETHANE	BDL	BDL	10
2-CHLOROETHYLVINYL ETHER	BDL	BDL	10
CHLOROFORM	BDL	BDL	5
DICHLOROBROMOMETHANE	\mathtt{BDL}	\mathtt{BDL}	5
1,1-DICHLOROETHANE	BDL	BDL	5
1,2-DICHLOROETHANE	\mathtt{BDL}	\mathtt{BDL}	5
1,1-DICHLOROETHYLENE	BDL	BDL	5
1,2-DICHLOROPROPANE	\mathtt{BDL}	\mathtt{BDL}	5
TRANS-1, 3-DICHLOROPROPENE	BDL	\mathtt{BDL}	5
ETHYLBENZENE	BDL	BDL	5
METHYLENE CHLORIDE	BDL	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	BDL	5 .
TETRACHLOROETHYLENE	BDL	BDL	5
- TOLUENE	1*	BDL	5
1,2-Trans-dichloroethylene	37	BDL	5 5 5
1,1,1-TRICHLOROETHANE	BDL	BDL	5
1,1,2-TRICHLOROETHANE	BDL	BDL	
TRI CHLOROETHYLENE	5	BDL	5
TRICHLOROFLUOROMETHANE	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL	BDL	10

^{*} FOUND BELOW METHOD DETECTION LIMIT

TABLE 12

VOLATILE ORGANICS	CONCENTRAT	ION (UG/L)	DETECTION LIMIT (UG/L)
HLA ID:	GPT 3-2	GPT 3-3	
JTC ID:	87-0272	87-0273	
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	BDL	\mathtt{BDL}	5
BROMOFORM	BDL	BDL	5
BROMOMETH ANE	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	5
CHLOROBENZENE	BDL	\mathtt{BDL}	5
CHLORODIBROMOMETHANE	BDL	BDL	5
CHLOROETHANE	BDL	BDL	10
CHLOROMETHANE	BDL	\mathtt{BDL}	10
2-CHLOROETHYLVINYL ETHER	BDL	BDL	10
CHLOROFORM	\mathtt{BDL}	BDL	5
DICHLOROBROMOMETHANE	\mathtt{BDL}	\mathtt{BDL}	5 5 5 5 5 5
1,1-DICHLOROETHANE	\mathtt{BDL}	BDL	5
1,2-dichloroethane	\mathtt{BDL}	BDL	5
1,1-DICHLOROETHYLENE	\mathtt{BDL}	BDL	5
1,2-DICHLOROPROPANE	BDL	BDL	5
TRANS-1,3-DICHLOROPROPENE	BDL	BDL	5
ETHYLBENZENE	\mathtt{BDL}	BDL	5
METHYLENE CHLORIDE	\mathtt{BDL}	BDL	5
1,1,2,2-TETRACHLOROETHANE	\mathtt{BDL}	BDL	5.
TETRACHLOROETHYLENE	\mathtt{BDL}	BDL	5
TOLUENE	\mathtt{BDL}	\mathtt{BDL}	5
1,2-Trans-dichloroethylene	BDL	BDL	5
1,1,1-TRICHLOROETHANE	BDL	BDL	5
1,1,2-TRICHLOROETHANE	BDL	BDL	5
Tri Chloroethylene	BDL	BDL	5
TRI CHLOROFLUOROME THANE	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL	BDL	10

TABLE 13

VOLATILE ORGANICS	CONCENTRAT	ION (UG/L)	DETECTION LIMIT (UG/L)
HLA ID: JTC ID:	GPT 4-1 87-0274	GPT 4-2 87-0275	
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	BDL	BDL	5
BROMOFORM	BDL	BDL	5
BROMOMETHANE	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	5
CHLOROBENZENE	BDL	BDL	5
CHLORODIBROMOMETHANE	BDL	BDL	5
CHLOROETHANE	BDL	BDL	10
CHLOROMETHANE	BDL	BDL	10
2-CHLOROETHYLVINYL ETHER	BDL	BDL	10
CHLOROFORM	BDL	BDL	5
DICHLOROBROMOMETHANE	BDL	BDL	5
1,1-DICHLOROETHANE	BDL	BDL	/ 5
1,2-DICHLOROETHANE	BDL	BDL	5 5 5 5
1,1-DICHLOROETHYLENE	BDL	BDL	5
1,2-DICHLOROPROPANE	BDL	BDL	5
TRANS-1, 3-DICHLOROPROPENE	BDL	BDL	5 5
ETHYLBENZENE	BDL	BDL	5 5
METHYLENE CHLORIDE	BDL BDL	BDL BDL	5
1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHYLENE	BDL	BDL	5
TOLUENE	BDL	BDL	5
1,2-TRANS-DICHLOROETHYLENE	BDL	BDL	5
1,1,1-TRICHLOROETHANE	BDL	BDL	5 5
1,1,2-TRICHLOROETHANE	BDL	BDL	5 .
TRICHLOROETHYLENE	BDL	BDL	5
TRICHLOROFLUOROMETHANE	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL	BDL	10

TABLE 14

			DETECTION
			LIMIT
VOLATILE ORGANICS	CONCENTRAT	ION (UG/L)	(UG/L)
HLA ID:	GPT 4-3	GPT 5-1	
JTC ID:	87-0343	<u>87-0277</u>	
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	BDL	BDL	5
BROMOFORM	BDL	BDL	5
BROMOMETHANE	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	5
CHLOROBENZENE	BDL	BDL	5
CHLORODIBROMOMETHANE	BDL	BDL	5
CHLOROETHANE	BDL	BDL	10
CHLOROMETHANE	BDL	BDL	10
2-CHLOROETHYLVINYL ETHER	BDL	BDL	10
CHLOROFORM	BDL	BDL	5
DICHLOROBROMOMETHANE	BDL	BDL	5
1,1-DICHLOROETHANE	BDL	BDL	5
1,2-DICHLOROETHANE	BDL	BDL	5
1,1-DICHLOROETHYLENE	BDL	BDL	5
1,2-DICHLOROPROPANE	BDL	BDL	5 5
TRANS-1,3-DICHLOROPROPENE	BDL	BDL	5
ETHYLBENZENE	BDL	BDL	5
METHYLENE CHLORIDE	BDL	BDL	5 5 5 5 5
1,1,2,2-TETRACHLOROETHANE	BDL	BDL	5
TETRACHLOROETHYLENE	BDL	BDL	5
TOLUENE	BDL	BDL	5
1,2-TRANS-DICHLOROETHYLENE	BDL	BDL	5
1,1,1-TRICHLOROETHANE	BDL	BDL	5
1,1,2-TRICHLOROETHANE	BDL	BDL	5
TRICHLOROETHYLENE	BDL	BDL	5
TRICHLOROFLUOROMETHANE	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL	BDL	10

TABLE 15

	TABLE 15		DETECTION
VOLATILE ORGANICS	CONCENTRAT	ION (UG/L)	LIMIT (UG/L)
HLA ID: JTC ID:	GPT 5-2 87-0278	GPT 5-3 87-0279	
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	BDL	BDL	5
BROMOFORM	BDL	BDL	5
BROMOMETHANE	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	5
CHLOROBENZENE	BDL	BDL	5
CHLORODI BROMOMETHANE	BDL	BDL	5
CHLOROETHANE	BDL	BDL	10
CHLOROMETHANE	BDL	BDL	10
2-CHLOROETHYLVINYL ETHER	BDL	BDL	10
CHLOROFORM	BDL	BDL	5
DICHLOROBROMOMETHANE	BDL	BDL	5
1,1-DICHLOROETHANE	BDL	BDL	5
1,2-DICHLOROETHANE	BDL	BDL	5
1,1-DICHLOROETHYLENE	BDL	BDL	5
1,2-DICHLOROPROPANE	BDL	BDL	5
TRANS-1,3-DICHLOROPROPENE	BDL	BDL	5
ETHYLBENZENE	BDL	BDL	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
METHYLENE CHLORIDE	BDL	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	BDL	5 .
TETRACHLOROETHYLENE	\mathtt{BDL}	BDL	5
TOLUENE	BDL	BDL	5
1,2-Trans-dichloroethylene	\mathtt{BDL}	BDL	5
1,1,1-TRICHLOROETHANE	BDL	BDL	5
1,1,2-TRICHLOROETHANE	BDL	BDL	5
TRICHLOROETHYLENE	BDL	BDL	_
TRICHLOROFLUOROMETHANE	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL	BDL	10

TABLE 16

VOLATILE ORGANICS	CONCENTRATE	10V (UG /I)	DETECTION LIMIT (UG/L)
VOLATILE ORGANICS	CONCENTRAT	TON (UG/L)	(00/11)
HLA ID: JTC ID:	GPT 6-1 87-0344	GPT 6-2 87-0281	
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	BDL	BDL	5
BROMOFORM	BDL	BDL	5
BROMOMETH ANE	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	5
CHLOROBENZENE	BDL	BDL	5
CHLORODIBROMOMETHANE	BDL	BDL	5
CHLOROETHANE	\mathtt{BDL}	\mathtt{BDL}	10
CHLOROMETHANE	BDL	BDL	10
2-CHLOROETHYLVINYL ETHER	BDL	BDL	10
CHLOROFORM	BDL	BDL	5 5 5 5 5 5 5 5
DICHLOROBROMOMETHANE	BDL	BDL	5
1,1-DICHLOROETHANE	\mathtt{BDL}	BDL	5
1,2-DICHLOROETHANE	\mathtt{BDL}	BDL	5
1,1-DICHLOROETHYLENE	BDL	BDL	5
1,2-DICHLOROPROPANE	\mathtt{BDL}	BDL	5
TRANS-1,3-DICHLOROPROPENE	BDL	BDL	5
ETHYLBENZENE	BDL	BDL	5
METHYLENE CHLORIDE	BDL	BDL	5
1,1,2,2-TETRACHLOROETHANE	\mathtt{BDL}	BDL	5 · 5 5 5 5 5
TETRACHLOROETHYL ENE	BDL	BDL	5
TOLUENE	BDL	BDL	5
1,2-TRANS-DICHLOROETHYLENE	BDL	BDL	5
1,1,1-TRICHLOROETHANE	BDL	BDL	5
1,1,2-TRICHLOROETHANE	BDL	BDL	5
TRICHLOROETHYLENE	BDL	BDL	5
TRICHLOROFLUOROMETHANE	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL	BDL	10

TABLE 17

VOLATILE ORGANICS HLA ID: JTC ID:	CONCENTRATI GPT 6-3 87-0282	ON (UG/L) Decon 1 87-0283	DETECTION LIMIT (UG/L)
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	BDL	BDL	5
BROMOFORM	BDL	BDL	5
BROMOMETHANE	BDL	BDL	10
CARBON TETRACHLORIDE	BDL	BDL	5
CHLOROBENZENE	BDL	BDL	5
CHLORODIBROMOMETHANE	BDL	BDL	5
CHLOROETHANE	BDL	BDL	10
CHLOROMETHANE	BDL	BDL	10
2-CHLOROETHYLVINYL ETHER	BDL	BDL	10
CHLOROFORM	BDL	14	5
DICHLOROBROMOMETHANE	BDL	2*	5 5 5
1,1-DICHLOROETHANE	2*	BDL	5
1,2-DICHLOROETHANE	5	BDL	5
1,1-DICHLOROETHYLENE	BDL	BDL	5
1,2-DICHLOROPROPANE	BDL	BDL	5
TRANS-1, 3-DICHLOROPROPENE	BDL	BDL	5
ETHYLBENZENE	BDL	BDL	5
METHYLENE CHLORIDE	BDL	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	BDL	5 .
TETRACHLOROETHYLENE	BDL	BDL	5
TOLUENE	BDL	BDL	5
1,2-TRANS-DICHLOROETHYLENE	BDL	BDL	5 5 5 5
1,1,1-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE	BDL BDL	BDL BDL	
TRICHLOROETHYLENE	BDL	BDL	5
TRICHLOROFLUOROMETHANE	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL	BDL	10
/		قبد برد سه	10

^{*} FOUND BELOW METHOD DETECTION LIMIT

TABLE 18

VOLATILE ORGANICS	CONCENTRAT	ION (UG/L)	DETECTION LIMIT (UG/L)
HLA ID: JTC ID:	Decon 2 87-0284	Trip Blank 87-0285	
ACROLEIN	BDL	BDL	20
ACRYONITRILE	BDL	BDL	10
BENZENE	\mathtt{BDL}	BDL	5
BROMOFORM	BDL	BDL	5
BROMOMETHANE	BDL	BDL	10
CARBON TETRACHLORIDE	\mathtt{BDL}	BDL	, 5
CHLOROBENZENE	\mathtt{BDL}	BDL	5
CHLORODIBROMOMETHANE	BDL	BDL	5
CHLOROETHANE	BDL	BDL	10
CHLOROMETHANE	BDL	BDL	10
2-CHLOROETHYLVINYL ETHER	\mathtt{BDL}	BDL	10
CHLOROFORM	BDL	BDL	5
DICHLOROBROMOMETHANE	\mathtt{BDL}	BDL	5 5 5 5
1,1-DICHLOROETHANE	BDL	BDL	5
1,2-DICHLOROETHANE	BDL	BDL	5
1,1-DICHLOROETHYLENE	\mathtt{BDL}	BDL	5
1,2-DICHLOROPROPANE	\mathtt{BDL}	BDL	. 5
TRANS-1,3-DICHLOROPROPENE	BDL	BDL	5
ETHYLBENZENE	BDL	BDL	5 5 5 5
METHYLENE CHLORIDE	BDL	BDL	5
1,1,2,2-TETRACHLOROETHANE	BDL	BDL	5 .
TETRACHLOROETHYLENE	BDL	BDL	5 5 5 5
TOLUENE	8	BDL	5
1,2-TRANS-DICHLOROETHYLENE	BDL	BDL	5
1,1,1-TRICHLOROETHANE	BDL	BDL	5
1,1,2-TRICHLOROETHANE	BDL	BDL	5
TRICHLOROETHYLENE	BDL	BDL	5
TRICHLOROFLUOROMETHANE	BDL	BDL	10
VINYL CHLORIDE	BDL	BDL	10
CIS-1,3-DICHLOROPROPENE	BDL	BDL	10

RESULTS OF PESTICIDE/PCB ANALYSES ON WATER SAMPLES

JTC DATA REPORT 87-147

TABLE 19

PESTICIDES/PCB'S	CONCENTRAT	ION (UG/L)	DETECTION LIMIT (UG/L)
HLA I.D.: JTC I.D.:	GPT 5-1 87-0277	GPT 5-2 87-0278	
ALDRIN ALPHA-BHC BETA-BHC GAMMA-BHC DELTA-BHC ALPHA CHLORDANE GAMMA CHLORDANE 4,4'-DDT 4,4'-DDE 4,4'-DDD DI ELDRIN ALPHA-ENDOSULFAN BETA-ENDOSULFAN ENDOSULFAN SULFATE ENDRIN ENDRIN KETONE HEPTACHLOR HEPTACHLOR PCB-1242 PCB-1254	BDL	BDL	0.1 0.1 0.1 0.1 0.5 0.5 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1
PCB-1221 PCB-1232 PCB-1248 PCB-1260 PCB-1016 TOXAPHENE	BDL BDL BDL BDL BDL BDL	BDL BDL BDL BDL BDL BDL	1.0 1.0 1.0 1.0 1.0

RESULTS OF PESTICIDE/PCB ANALYSES ON WATER SAMPLES

JTC DATA REPORT 87-147

TABLE 20

PESTICIDES/PCB'S	CONCENTRAT	ION (UG/L)	DETECTION LIMIT (UG/L)
HLA I.D.: JTC I.D.:	GPT 5-3 87-0279	Decon 1 87-0283	
ALDRIN ALPHA-BHC BETA-BHC GAMMA-BHC DELTA-BHC ALPHA CHLORDANE GAMMA CHLORDANE 4,4'-DDT 4,4'-DDE 4,4'-DDD DIELDRIN ALPHA-ENDOSULFAN BETA-ENDOSULFAN ENDOSULFAN SULFATE ENDRIN ENDRIN KETONE HEPTACHLOR HEPTACHLOR PCB-1242 PCB-1254 PCB-1221	BDL	BDL	0.1 0.1 0.1 0.1 0.5 0.5 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1
PCB-1232 PCB-1248 PCB-1260 PCB-1016 TOXAPHENE	BDL BDL BDL BDL BDL	BDL BDL BDL BDL BDL	1.0 1.0 1.0 1.0

RESULTS OF PESTICIDE/PCB ANALYSES ON WATER SAMPLES

JTC DATA REPORT 87-147

TABLE 21

PESTICIDES/PCB'S	CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
HLA I.D.:	Decon 2	
JTC I.D.:	<u>87-0284</u>	
ALDRIN	BDL	0.1
ALPHA-BHC	BDL	0.1
BETA-BHC	BDL	0.1
GAMMA-BHC	BDL	0.1
DELTA-BHC	BDL	0.1
ALPHA CHLORDANE	BDL	0.5
GAMMA CHLORDANE	BDL	0.5
4,4'-DDT	BDL	0.1
4,4'-DDE	BDL	0.1
4,4'-DDD	BDL	0.1
DIELDRIN	BDL	0.1
ALPHA-ENDOSULFAN	BDL .	0.1
BETA-ENDOSULFAN	BDL	0.1
ENDOSULFAN SULFATE	BDL	0.1
ENDRIN	BDL	0.1
ENDRIN KETONE	BDL	0.1
HEPTACHLOR	BDL	0.1
HEPTACHLOR EPOXIDE	BDL	0.1 .
METHOXYCHLOR	BDL	0.5
PCB-1242	BDL	1.0
PCB-1254	BDL	1.0
PCB-1221	BDL	1.0
PCB-1232	BDL	1.0
PCB-1248	BDL	1.0
PCB-1260	BDL	1.0
PCB-1016	BDL	1.0
TOXAPHENE	BDL	1.0

Table 22

ACID EXTRACTABLE ORGANICS	CONCENTRAT	ION (UG/L)		DETECTION LIMIT (UG/L)
Client I.D.: JTC I.D.:	We 11 1 87-0249	Well 2 87-0250		
2-CHLOROPHENOL	BDL	BDL		10
2,4-DICHLOROPHENOL	BDL	BDL		10
2,4-DIMETHYLPHENOL	BDL	BDL	9	10
4,6-DINITRO-O-CRESOL	BDL	BDL		50
2,4-DINITROPHENOL	BDL	BDL		50
2-NITROPHENOL	\mathtt{BDL}	BDL		10
4-NITROPHENOL	BDL	BDL		50
P-CHLORO-M-CRESOL	BDL	BDL		10
PENTACHLOROPHENOL	BDL	BDL		50
PHENOL	12	\mathtt{BDL}		10
2,4,5-TRICHLOROPHENOL	BDL	BDL		50
2,4,6-TRICHLOROPHENOL	BDL	BDL		10

Table 23

ACID EXTRACTABLE ORGANICS	CONCENTRAT	DETECTION LIMIT (UG/L)	
Client I.D.: JTC I.D.:	Well 3 87-0251	Well 4 87-0252	
2-CHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DIMETHYLPHENOL 4,6-DINITRO-O-CRESOL 2,4-DINITROPHENOL 2-NITROPHENOL 4-NITROPHENOL P-CHLORO-M-CRESOL PENTACHLOROPHENOL PHENOL 2,4-TRICHLOROPHENOL	BDL BDL BDL BDL BDL BDL BDL BDL BDL	BDL BDL BDL BDL BDL BDL BDL BDL BDL BDL	10 10 50 50 10 50 10 50
2,4,5-TRICHLOROPHENOL 2,4,6-TRICHLOROPHENOL	BDL BDL	BDL	10

Table 24

ACID EXTRACTABLE ORGANICS	CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
Client I.D.:	Well 5	
JTC I.D.:	<u>87-0253</u>	
2-CHLOROPHENOL	BDL	10
2,4-DICHLOROPHENOL	BDL	10
2,4-DIMETHYLPHENOL	o BDL	10
4,6-DINITRO-O-CRESOL	BDL	50
2,4-DINITROPHENOL	BDL	50
2-NITROPHENOL	BDL	10
4-NITROPHENOL	BDL	50
P-CHLORO-M-CRESOL	BDL	10
PENTACHLOROPHENOL	BDL	50
PHENOL	BDL	10
2,4,5-TRICHLOROPHENOL	BDL	50
2,4,6-TRICHLOROPHENOL	BDL	10

Table 25

ACID EXTRACTABLE ORGANICS	CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
Client I.D.:	GPT 1-1	
JTC I.D.:	87-0261	
2-CHLOROPHENOL	BDL	10
2,4-DICHLOROPHENOL	BDL	10
2,4-DIMETHYLPHENOL	BDL	10
4,6-DINITRO-O-CRESOL	BDL	50
2,4-DINITROPHENOL	BDL	50
2-NITROPHENOL	BDL	10
4-NITROPHENOL	BDL	50
P-CHLORO-M-CRESOL	BDL	10
PENTACHLOROPHENOL	BDL	50
PHENOL	BDL	10
2,4,5-TRICHLOROPHENOL	BDL	50
2,4,6-TRICHLOROPHENOL	BDL	10

Table 26

ACID EXTRACTABLE ORGANICS	CONCENTRAT	ION (UG/L)	DETECTION LIMIT (UG/L)
Client I.D.:	GPT 1-2	GPT 1-3	
JTC I.D.:	<u>87-0262</u>	<u>87–263</u>	
2-CHLOROPHENOL	BDL	BDL	10
2,4-DICHLOROPHENOL	BDL	BDL	10
2,4-DIMETHYLPHENOL	\mathtt{BDL}	BDL	10
4,6-DINITRO-O-CRESOL	BDL	BDL	50
2,4-DINITROPHENOL	BDL	BDL	50
2-NITROPHENOL	BDL	BDL	10
4-NITROPHENOL	BDL	BDL	50
P-CHLORO-M-CRESOL	\mathtt{BDL}	BDL	10
PENTACHLOROPHENOL	BDL	BDL	50
PHENOL	\mathtt{BDL}	BDL	10
2,4,5-TRICHLOROPHENOL	BDL	BDL	50
2,4,6-TRICHLOROPHENOL	BDL	BDL	10

Table 27

ACID EXTRACTABLE ORGANICS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
Client I.D.:	GPT 2-1	GPT 2-2	
JTC I.D.:	87-0268	87-0269	
2-CHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DIMETHYLPHENOL 4,6-DINITRO-O-CRESOL 2,4-DINITROPHENOL 2-NITROPHENOL 4-NITROPHENOL P-CHLORO-M-CRESOL PENTACHLOROPHENOL PHENOL	BDL	BDL	10
	BDL	BDL	10
	BDL	BDL	10
	BDL	BDL	50
	BDL	BDL	50
	BDL	BDL	10
	BDL	BDL	50
	BDL	BDL	10
2,4,5-TRICHLOROPHENOL 2,4,6-TRICHLOROPHENOL	BDL	BDL	50
	BDL	BDL	10

Table 28

ACID EXTRACTABLE ORGANICS	CONCENTRAT	TION (UG/L)	DETECTION LIMIT (UG/L)
Client I.D.: JTC I.D.:	GPT 2-3 87-0270	GPT 3-1 87-0271	
2-CHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DIMETHYLPHENOL 4,6-DINITRO-O-CRESOL 2,4-DINITROPHENOL 2-NITROPHENOL 4-NITROPHENOL P-CHLORO-M-CRESOL PENTACHLOROPHENOL PHENOL 2,4,5-TRICHLOROPHENOL 2,4,6-TRICHLOROPHENOL	BDL BDL BDL BDL BDL BDL BDL BDL BDL BDL	BDL	10 10 50 50 10 50 10 50 10

Table 29

ACID EXTRACTABLE ORGANICS	CONCENTRAT	TION (UG/L)	DETECTION LIMIT (UG/L)	
Client I.D.: JTC I.D.:	GPT 3-2 87-0272	GPT 3-3 87-0273		
2-CHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DIMETHYLPHENOL 4,6-DINITRO-O-CRESOL 2,4-DINITROPHENOL 2-NITROPHENOL 4-NITROPHENOL P-CHLORO-M-CRESOL PENTACHLOROPHENOL PHENOL	BDL	BDL	10 10 50 50 10 50 10	
2,4,5-TRICHLOROPHENOL 2,4,6-TRICHLOROPHENOL	BDL BDL	BDL BDL	50 10	

Table 30

ACID EXTRACTABLE ORGANICS	CONCENTRATION (UG/L)		DETECTION LIMIT (UG/L)
Client I.D.: JTC I.D.:	GPT 2-1 87-0268	GPT 2-2 87-0269	
2-CHLOROPHENOL	BDL	BDL	10
2,4-DICHLOROPHENOL	BDL	BDL	10
2,4-DIMETHYLPHENOL	BDL	BDL	10
4,6-DINITRO-O-CRESOL	BDL	BDL	50
2,4-DINITROPHENOL	BDL	BDL	50
2-NITROPHENOL	BDL	\mathtt{BDL}	10
4-NITROPHENOL	BDL	BDL	50
P-CHLORO-M-CRESOL	\mathtt{BDL}	\mathtt{BDL}	10
PENTACHLOROPHENOL	BDL	\mathtt{BDL}	50
PHENOL	BDL	\mathtt{BDL}	10
2,4,5-TRICHLOROPHENOL	BDL	BDL	50
2,4,6-TRICHLOROPHENOL	BDL	BDL	10

Table 31

ACID EXTRACTABLE ORGANICS	CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
Client I.D.:	GPT 4-2	
JTC I.D.:	<u>87-0275</u>	
2-CHLOROPHENOL	BDL	10
2,4-DICHLOROPHENOL	BDL	10
2,4-DIMETHYLPHENOL	BDL	10
4,6-DINITRO-O-CRESOL	BDL	50
2,4-DINITROPHENOL	BDL	50
2-NITROPHENOL	BDL	10
4-NITROPHENOL	BDL	50
P-CHLORO-M-CRESOL	BDL	10
PENTACHLOROPHENOL	BDL	50
PHENOL	BDL	10
2,4,5-TRICHLOROPHENOL	BDL	50
2,4,6-TRICHLOROPHENOL	BDL	10

Table 32

ACID EXTRACTABLE ORGANICS	CONCENTRAT	CION (UG/L)	DETECTION LIMIT (UG/L)
Client I.D.: JTC I.D.:	GPT 4-3 87-0343	GPT 5-1 87-0277	
2-CHLOROPHENOL	BDL	BDL	10
2,4-DICHLOROPHENOL	BDL	BDL	10
2,4-DIMETHYLPHENOL	BDL	BDL	10
4,6-DINITRO-O-CRESOL	BDL	BDL	50
2,4-DINITROPHENOL	BDL	BDL	50
2-NITROPHENOL	BDL	BDL	10
4-NITROPHENOL	BDL	BDL	50
P-CHLORO-M-CRESOL	BDL	BDL	10
PENTACHLOROPHENOL	BDL	\mathtt{BDL}	50
PHENOL	BDL	\mathtt{BDL}	10
2,4,5-TRICHLOROPHENOL	BDL	\mathtt{BDL}	50
2,4,6-TRICHLOROPHENOL	BDL	BDL	10

Table 33

ACID EXTRACTABLE ORGANICS	CONCENTRAT	ION (UG/L)	DETECTION LIMIT (UG/L)
Client I.D.: JTC I.D.:	GPT 5-2 87-0278	GPT 5-3 87-0279	
2-CHLOROPHENOL	BDL	BDL	10
2,4-DICHLOROPHENOL	BDL	BDL	10
2,4-DIMETHYLPHENOL	BDL	BDL	10
4,6-DINITRO-O-CRESOL	BDL	BDL	50
2,4-DINITROPHENOL	BDL	BDL	50
2-NITROPHENOL	BDL	BDL	10
4-NITROPHENOL	BDL	BDL	50
P-CHLORO-M-CRESOL	BDL	BDL	10
PENTACHLOROPHENOL	BDL	BDL	50
PHENOL	BDL	BDL	10
2,4,5-TRICHLOROPHENOL	BDL	BDL	50
2,4,6-TRICHLOROPHENOL	BDL	BDL	10

Table 34

ACID EXTRACTABLE ORGANICS	CONCENTRA	TION (UG/L)	DETECTION LIMIT (UG/L)
Client I.D.:	GPT 6-1	GPT 6-2	
JTC I.D.:	87-0344	87-0281	
2-CHLOROPHENOL	BDL	BDL	10
2,4-DICHLOROPHENOL	\mathtt{BDL}	BDL	10
2,4-DIMETHYLPHENOL	BDL	o BDL	10
4,6-DINITRO-O-CRESOL	BDL	BDL	50
2,4-DINITROPHENOL	BDL	BDL	50
2-NITROPHENOL	BDL	BDL	10
4-NITROPHENOL	BDL	BDL	50
P-CHLORO-M-CRESOL	BDL	BDL	10
PENTACHLOROPHENOL	BDL	BDL	50
PHENOL	BDL	BDL	10
2,4,5-TRICHLOROPHENOL	BDL	BDL	50
2,4,6-TRICHLOROPHENOL	BDL	BDL	10
2, ., 0 - 112 - 1102 1102			

Table 35

ACID EXTRACTABLE ORGANICS	CONCENTRA	rion (UG/L)	DETECTION LIMIT (UG/L)
Client I.D.: JTC I.D.:	GPT 6-3 87-0282	Decon 1 87-0283	
2-CHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DIMETHYLPHENOL 4,6-DINITRO-O-CRESOL 2,4-DINITROPHENOL 2-NITROPHENOL 4-NITROPHENOL P-CHLORO-M-CRESOL PENTACHLOROPHENOL PHENOL 2,4,5-TRICHLOROPHENOL 2,4,6-TRICHLOROPHENOL	BDL	BDL BDL BDL BDL BDL BDL BDL BDL BDL BDL	10 10 10 50 50 10 50 10 50

Table 36

ACID EXTRACTABLE ORGANICS	CONCENTRATION (UG/L)	DETECTION LIMIT (UG/L)
Client I.D.: JTC I.D.:	Decon 2 87-0284	
ofc 1.D.:	<u>57-0204</u>	
2-CHLOROPHENOL	BDL	10
2,4-DICHLOROPHENOL	BDL	10
2,4-DIMETHYLPHENOL	BDL	。 10
4,6-DINITRO-O-CRESOL	BDL	50
2,4-DINITROPHENOL	BDL	50
2-NITROPHENOL	BDL	10
4-NITROPHENOL	BDL	50
P-CHLORO-M-CRESOL	BDL	10
PENTACHLOROPHENOL	BDL	50
PHENOL	BDL	10
2,4,5-TRICHLOROPHENOL	BDL	50
2,4,6-TRICHLOROPHENOL	BDL	10

	Table 3/		
			DETECTION
BASE-NEUTRAL			LIMIT
EXTRACTABLE ORGANICS	CONCENTRA	rion (UG/L)	(UG/L)
Client I.D.:	Well 1	We 11 2	
JTC I.D.:	87-0249	87-0250	
ACENAPHTHENE	BDL	BDL	10
ACENAPHTHYLENE	BDL	BDL	10
ANTHRACENE	BDL	BDL	10
BENZIDINE	BDL	BDL	50
BENZO (A) ANTHRACENE	BDL	BDL	10
BENZO (A) PYRENE	BDL	BDL	10
BENZO (B) FLUORANTHENE	BDL	BDL	10
BENZO (GHI) PERYLENE	BDL	BDL	10
BENZO (K) FLUORANTHENE	BDL	BDL	10
BIS (2-CHLOROETHOXY) METHANE	BDL	BDL	10
BIS (2-CHLOROETHYL) ETHER	BDL	BDL	10
BIS (2-CHLOROISOPROPYL) ETHER		BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE	24	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	BDL	10
		BDL	10
BUTYLBENZYLPHTHALATE	BDL		10
2-CHLORONA PHTHALENE	BDL	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	BDL	10
CHRYSENE	BDL	BDL	
DIBENZO (A, H) ANTHRACENE	BDL	BDL	10
1,2-DICHLOROBENZENE	BDL	BDL	10
1,3-DICHLOROBENZENE	BDL	BDL	10
1,4-DICHLOROBENZENE	BDL	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	BDL	20
DIETHYLPHTHALATE	BDL	BDL	10
DIMETHYL PHTHALATE	BDL	BDL	10
DI-N-BUTYLPHTHALATE	BDL	BDL	10
1,2-DIPHENYLHYDRAZINE	BDL	BDL	10
2,4-DINITROTOLUENE	BDL	BDL	10
2,6-DINITROTOLUENE	BDL	BDL	10
DI-N-OCTYLPHTHALATE	BDL	BDL	10
FLUORANTHENE	BDL	BDL	10
FLUORENE	BDL	BDL	10
HEXACHLOROBENZENE	\mathtt{BDL}	BDL	10
HEXACHLOROBUTADIENE	BDL	BDL	10
HEXACHLOROCYCLOPENTADI ENE	BDL	BDL	10
HEXACHLOROETHANE	\mathtt{BDL}	BDL	10
INDENO (1,2,3-CD) PYRENE	BDL	BDL	10
ISOPHORONE	BDL	BDL	10
NAPHTHALENE	BDL	BDL	10
NITROBENZENE	BDL	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	BDL	10
N-NITROSODIPHENYLAMINE	BDL	BDL	10
PHENANTHRENE	BDL	BDL	10
PYRENE	BDL	BDL	10
1,2,4-TRICHLOROBENZENE	BDL	BDL	10

	•		DETECTION
BASE-NEUTRAL			LIMIT
EXTRACTABLE ORGANICS	CONCENTRAT	CION (UG/L)	(UG/L)
Client I.D.:	Well 3	Well 4	
JTC I.D.:	87-0251	87-0252	
ACENAPHTHENE	BDL	BDL	10
ACENAPHTHYLENE	BDL	BDL	10
ANTHRACENE	BDL	BDL	10
BENZIDINE	BDL	BDL	50
BENZO (A) ANTHRACENE	BDL	BDL	10
BENZO (A) PYRENE	BDL	BDL	10
BENZO (B) FLUORANTHENE	BDL	BDL	10
BENZO (GHI) PERYLENE	BDL	BDL	10
BENZO (K) FLUORANTHENE	BDL	BDL	10
BIS (2-CHLOROETHOXY) METHANE		BDL	10
· · · · · · · · · · · · · · · · · · ·	o BDL	BDL	10
BIS (2-CHLOROISOPROPYL) ETHER		BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE		BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	BDL	10
BUTYLBENZYLPHTHALATE	BDL	BDL	10
2-CHLORONAPHTHALENE	BDL	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	BDL	10
CHRYSENE PHENTE PHENTE BYNER	BDL	BDL	10
DIBENZO (A, H) ANTHRACENE	BDL	BDL	10
1,2-DICHLOROBENZENE	BDL	BDL	10
1,3-DICHLOROBENZENE	BDL	BDL	10
1,4-DICHLOROBENZENE	BDL	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	BDL	20
DIETHYLPHTHALATE	BDL	BDL	10
DIMETHYL PHTHALATE	BDL	BDL	10
DI-N-BUTYLPHTHALATE	BDL	BDL	10
1,2-DIPHENYLHYDRAZINE	BDL	BDL	10
2,4-DINITROTOLUENE	BDL	BDL	10
2,6-DINITROTOLUENE	BDL	BDL	10
DI-N-OCTYLPHTHALATE	BDL	BDL	10
FLUORANTHENE	BDL	BDL	10
FLUORENE	BDL BDL	BDL	10
HEXACHLOROBENZENE	BDL	BDL	10
			10
HEXACHLOROBUTADIENE	BDL	BDL	
HEXACHLOROCYCLOPENTADIENE	BDL	BDL	10
HEXACHLOROETHANE	BDL	BDL	10
INDENO (1,2,3-CD) PYRENE	BDL	BDL	10
ISOPHORONE	BDL	BDL	10
NAPHTHALENE	BDL	BDL	10
NITROBENZENE	BDL	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	BDL	10
N-NITROSODIPHENYLAMINE	BDL	BDL	10
PHENANTHRENE	BDL	BDL	10
PYRENE	BDL	BDL	10
1,2,4-TRICHLOROBENZENE	BDL	BDL	10

Tab	le 39	
		DETECTION
BASE-NEUTRAL		LIMIT
EXTRACTABLE ORGANICS Client I.D.:	CONCENTRATION (UG/L)	(UG/L)
Client I.D.:	Well 5	
JTC I.D.:	87-0253	
ACENAPHTHENE	BDL	10
ACENAPHTHYLENE	BDL	10
		10
ANTHRACENE	BDL	-
BENZIDINE	BDL	50
BENZO (A) ANTHRACENE	BDL	10
BENZO (A) PYRENE	BDL	10
BENZO (B) FLUORANTHENE	BDL	10
BENZO (GHI) PERYLENE	BDL	10
BENZO (K) FLUORANTHENE	BDL	10
BIS (2-CHLOROETHOXY) METHANE	BDL	10
BIS (2-CHLOROETHYL) ETHER	BDL	10
BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	10
BUTYLBENZYLPHTHALATE	BDL	10
2-CHLORONA PHTHAL ENE	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	10
CHRYSENE	BDL	10
DIBENZO (A,H) ANTHRACENE	BDL	10
1,2-DICHLOROBENZENE	BDL	10
1,3-DICHLOROBENZENE	BDL	10
1,4-DICHLOROBENZENE	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	20
DIETHYLPHTHALATE	BDL	10
DIMETHYL PHTHALATE	BDL	10
DI-N-BUTYLPHTHALATE	BDL	10 .
1,2-DIPHENYLHYDRAZINE	BDL	10
2,4-DINITROTOLUENE	BDL	10
		10
2,6-DINITROTOLUENE	BDL	
DI -N-OCTYLPHTHALATE	BDL	10
FLUORANTHENE	BDL	10
FLUORENE	BDL	10
HEXACHLOROBENZENE	BDL	10
HEXACHLOROBUTADI ENE	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	10
HEXACHLOROETHANE	BDL	10
INDENO (1,2,3-CD) PYRENE	BDL	10
I SOPHORONE	BDL	10
NA PHTH AL ENE	BDL	10
NITROBENZENE	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	10
N-NITROSODIPHENY LAMINE	BDL	10
PHENANTHRENE	BDL	10
PYRENE	BDL	10
 		
1,2,4-TRICHLOROBENZENE	BDL	10

		DETECTION
BASE-NEUTRAL	001107117717717011 /110 /r \	LIMIT
EXTRACTABLE ORGANICS	CONCENTRATION (UG/L) GPT-1-1	(UG/L)
Client I.D.:	87-0261	
JTC I.D.:		10
ACENAPHTHENE	BDL	
ACENAPHTHYLENE	BDL	10
ANTHRACENE	BDL	10
BENZIDINE	BDL	50
BENZO (A) ANTHRACENE	BDL	10
BENZO (A) PYRENE	BDL	10
BENZO (B) FLUORANTHENE	BDL	10
BENZO (GHI) PERYLENE	BDL	10
BENZO (K) FLUORANTHENE	BDL	10
BIS (2-CHLOROETHOXY) METHANE	BDL 5	10
BIS (2-CHLOROETHYL) ETHER	BDL	10
BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	10
BUTYLBENZYLPHTHALATE	BDL	10
2-chloronaphthalene	\mathtt{BDL}	10
4-CHLOROPHENYL PHENYL ETHER	BDL	10
CHRYSENE	BDL	10
DIBENZO (A,H) ANTHRACENE	BDL	10
1,2-DICHLOROBENZENE	BDL	10
1,3-DICHLOROBENZENE	BDL	10
1,4-DICHLOROBENZENE	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	20
DI ETHYLPHTHALATE	BDL	10
DIMETHYL PHTHALATE	BDL	10 .
DI-N-BUTYLPHTHALATE	BDL	10
1,2-DIPHENYLHYDRAZINE	BDL	10
2,4-DINITROTOLUENE	BDL	10
2,6-DINITROTOLUENE	\mathtt{BDL}	10
DI-N-OCTYLPHTHALATE	BDL	10
FLUORANTHENE	BDL	10
FLUORENE	BDL	10
HEXACHLOROBENZENE	\mathtt{BDL}	10
HEXACHLOROBUTADI ENE	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	10
HEXACHLOROETHANE	BDL	10
INDENO (1,2,3-CD) PYRENE	\mathtt{BDL}	10
I SOPHORONE	BDL	10
NAPHTHALENE	BDL	10
NITROBENZENE	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	10
N-NITROSODIPHENYLAMINE	BDL	10
PHENANTHRENE	BDL	10
PYRENE	BDL	10
1,2,4-TRICHLOROBENZENE	BDL	10

EASE-NEUTRAL CONCENTRATION (UG/L)				DETECTION
Client I.D.: JTC I.D.: 87-0262 87-0263	BASE-NEUTRAL			LIMIT
Client I.D.: GPT 1-2 GPT 1-3	EXTRACTABLE ORGANICS	CONCENTRATION	(UG/L)	(UG/L)
ACENAPHTHENE	Client I.D.:	GPT 1-2		
ACENAPHTHYLENE ANTHRACENE BDL BDL BDL BDL BDL DDL DDL DD	JTC I.D.:	87-0262	87-0263	
ANTHRACENE BENZIDINE BENZO (A) ANTHRACENE BENZO (A) PYRENE BENZO (A) PYRENE BENZO (B) FLUORANTHENE BENZO (GHI) PERYLENE BDL BENZO (K) FLUORANTHENE BDL BDL BDL BDL BDL BDL BDL BD	ACENAPHTHENE	BDL	BDL	10
BENZIDINE	ACENAPHTHYLENE	BDL	BDL	10
BENZO (A) ANTHRACENE	ANTHRACENE	BDL	BDL	10
BENZO (A) PYRENE	BENZIDINE	BDL	BDL	50
BENZO (B) FLUORANTHENE	BENZO (A) ANTHRACENE	BDL	BDL	10
BENZO (GHI) PERYLENE BDL BDL 10	BENZO (A) PYRENE	BDL	BDL	10
BENZO (K) FLUORANTHENE BIS (2-CHLOROETHOXY) METHANE BIS (2-CHLOROETHYL) ETHER BDL BDL 10 BIS (2-CHLOROETHYL) ETHER BDL BDL 10 BIS (2-CHLOROISOPROPYL) ETHER BDL BDL 10 BIS (2-ETHYLHEXYL) PHTHALATE BDL BDL 10 4-BROMOPHENYL PHENYL ETHER BDL BDL 10 BUTYLBENZYLPHTHALATE BDL BDL 10 BUTYLBENZYLPHTHALATE BDL BDL 10 2-CHLORONAPHTHALENE BDL BDL 10 4-CHLOROPHENYL PHENYL ETHER BDL BDL 10 CHRYSENE BDL BDL 10 I BDL 10	BENZO (B) FLUORANTHENE	BDL	BDL	10
BIS (2-CHLOROETHOXY) METHANE BIS (2-CHLOROETHYL) ETHER BDL BIS (2-CHLOROISOPROPYL) ETHER BDL BDL 10 BIS (2-CHLOROISOPROPYL) ETHER BDL BDL 10 BIS (2-ETHYLHEXYL) PHTHALATE BDL BDL 10 4-BROMOPHENYL PHENYL ETHER BDL BDL 10 2-CHLORONAPHTHALATE BDL BDL 10 2-CHLOROMAPHTHALENE BDL BDL 10 CHRYSENE BDL BDL 10 DIBENZO (A,H) ANTHRACENE BDL BDL 10 1,2-DICHLOROBENZENE BDL BDL 10 1,3-DICHLOROBENZENE BDL BDL 10 1,4-DICHLOROBENZENE BDL BDL 10 1,4-DICHLOROBENZENE BDL BDL 10 1,4-DICHLOROBENZIDINE BDL BDL 10 DIMETHYL PHTHALATE BDL BDL 10 DIMETHYL PHTHALATE BDL BDL 10 DI-M-BUTYLPHTHALATE BDL BDL 10 1,2-DIPHENYLHYDRAZINE BDL BDL 10 2,6-DINITROTOLUENE BDL BDL DI-M-BUTYLPHTHALATE BDL BDL DI-M-CCTYLPHTHALATE BDL BDL DI-M-CTYLPHTHALATE BDL BDL DI-M-CTY	BENZO (GHI) PERYLENE	BDL	BDL	10
BIS (2~CHLOROETHYL) ETHER BDL BDL 10 BIS (2-CHLOROISOPROPYL) ETHER BDL BDL 10 BIS (2-ETHYLHEXYL) PHTHALATE BDL BDL 10 4-BROMOPHENYL PHENYL ETHER BDL BDL 10 BUTYLBENZYLPHTHALATE BDL BDL 10 2-CHLORONAPHTHALENE BDL BDL 10 4-CHLOROPHENYL PHENYL ETHER BDL BDL 10 CHRYSENE BDL BDL 10 CHRYSENE BDL BDL 10 CHRYSENE BDL BDL 10 I,2-DICHLOROBENZENE BDL BDL 10 1,3-DICHLOROBENZENE BDL BDL 10 1,3-DICHLOROBENZENE BDL BDL 10 1,3-DICHLOROBENZIDINE BDL BDL 10 1,4-DICHLOROBENZIDINE BDL BDL 10 1,4-DICHLOROBENZENE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 EFLUORANTHENE BDL BDL 10 EFLUORANTHENE BDL BDL 10 EL 10	BENZO (K) FLUORANTHENE	BDL	BDL	10
BIS (2-CHLOROISOPROPYL) ETHER BDL BDL 10 BIS (2-ETHYLHEXYL) PHTHALATE BDL BDL 10 4-BROMOPHENYL PHENYL ETHER BDL BDL 10 BUTYLBENZYLPHTHALATE BDL BDL 10 2-CHLORONAPHTHALENE BDL BDL 10 4-CHLOROPHENYL PHENYL ETHER BDL BDL 10 CHRYSENE BDL BDL 10 CHRYSENE BDL BDL 10 DIBENZO (A,H) ANTHRACENE BDL BDL 10 1,2-DICHLOROBENZENE BDL BDL 10 1,3-DICHLOROBENZENE BDL BDL 10 1,4-DICHLOROBENZENE BDL BDL 10 3,3'-DICHLOROBENZIDINE BDL BDL 10 3,3'-DICHLOROBENZIDINE BDL BDL 10 DIMETHYL PHTHALATE BDL BDL 10 DIMETHYL PHTHALATE BDL BDL 10 DI-M-BUTYLPHTHALATE BDL BDL 10 1,2-DIPHENYLHYDRAZINE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORANTHENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROBUTADIENE BDL BDL 10 HEXACHLOROBUTADIENE BDL BDL 10 HEXACHLOROBUTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 NAPHTHALENE BDL BDL 10 NAPHTHALENE BDL BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL BDL 10 PYKENE BDL BDL BDL 10 PYKENE	BIS (2-CHLOROETHOXY) METHANE	BDL	BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE BDL BDL 10 4-BROMOPHENYL PHENYL ETHER BDL BDL 10 2-CHLORONAPHTHALENE BDL BDL 10 4-CHLOROPHENYL PHENYL ETHER BDL BDL 10 4-CHLOROPHENYL PHENYL ETHER BDL BDL 10 CHRYSENE BDL BDL 10 DIBENZO (A, H) ANTHRACENE BDL BDL 10 1, 2-DICHLOROBENZENE BDL BDL 10 1, 3-DICHLOROBENZENE BDL BDL 10 1, 3-DICHLOROBENZENE BDL BDL 10 1, 3-OICHLOROBENZENE BDL BDL 10 1, 3-OICHLOROBENZIDINE BDL BDL 10 1, 3-OICHLOROBENZIDINE BDL BDL 10 DIETHYLPHTHALATE BDL BDL 10 DIETHYLPHTHALATE BDL BDL 10 DI-B-BUTYLPHTHALATE BDL BDL 10 2, 4-DINITROTOLUENE BDL BDL 10 2, 4-DINITROTOLUENE BDL BDL 10 2, 6-DINITROTOLUENE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORANTHENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROBURADIENE BDL BDL 10 HEXACHLOROSUTADIENE BDL BDL 10 NAPHTHALENE BDL BDL 10 NAPHTHALENE BDL BDL 10 NAPHTHALENE BDL BDL 10 NAPHTHALENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 PYKENE BDL BDL 10 PYKENE BDL BDL 10 PYKENE	BIS (2~CHLOROETHYL) ETHER	BDL	\mathtt{BDL}	10
### A-BROMOPHENYL PHENYL ETHER	BIS (2-CHLOROISOPROPYL) ETHER	BDL	BDL	10
BUTYLBENZYLPHTHALATE BDL BDL 10 2-CHLORONAPHTHALENE BDL BDL 10 4-CHLOROPHENYL PHENYL ETHER BDL BDL 10 CHRYSENE BDL BDL 10 DIBENZO (A,H) ANTHRACENE BDL BDL 10 1,2-DICHLOROBENZENE BDL BDL 10 1,3-DICHLOROBENZENE BDL BDL 10 1,4-DICHLOROBENZENE BDL BDL 10 3,3'-DICHLOROBENZENE BDL BDL 10 3,3'-DICHLOROBENZIDINE BDL BDL 10 DIETHYLPHTHALATE BDL BDL 10 DIMETHYL PHTHALATE BDL BDL 10 DI-N-BUTYLPHTHALATE BDL BDL 10 1,2-DIPHENYLHYDRAZINE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORENE BDL BDL 10 FLUORENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROSENZENE BDL BDL 10 HEXACHLOROSENZENE BDL BDL 10 HEXACHLOROSENZENE BDL BDL 10 HEXACHLOROSENZENE BDL BDL 10 HEXACHLOROSTHANE BDL BDL 10 HEXACHLOROSTHANE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 PHENANTHENE BDL BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL BDL 10 PHENANTHENE BDL BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL BDL 10 PHENANTHENE BDL BDL BDL 10 PYRENE	BIS (2-ETHYLHEXYL) PHTHALATE	BDL	BDL	10
2-CHLORONAPHTHALENE	4-BROMOPHENYL PHENYL ETHER	BDL	\mathtt{BDL}	10
## A-CHLOROPHENYL PHENYL ETHER	BUTYLBENZYLPHTHALATE	BDL	BDL	10
DIBENZO (A,H) ANTHRACENE	2-CHLORONAPHTHALENE	BDL	BDL	10
DIBENZO (A,H) ANTHRACENE BDL BDL 10 1,2-DICHLOROBENZENE BDL BDL 10 1,4-DICHLOROBENZENE BDL BDL 10 1,4-DICHLOROBENZENE BDL BDL 10 3,3'-DICHLOROBENZENE BDL BDL 10 DI,3,3'-DICHLOROBENZIDINE BDL BDL 10 DIETHYLPHTHALATE BDL BDL 10 DIMETHYL PHTHALATE BDL BDL 10 DI-N-BUTYLPHTHALATE BDL BDL 10 1,2-DIPHENYLHYDRAZINE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 2,6-DINITROTOLUENE BDL BDL 10 DI-N-OCTYLPHTHALATE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROBUTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 NAPHTHALENE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE	4-CHLOROPHENYL PHENYL ETHER	BDL	BDL	10
1,2-DICHLOROBENZENE BDL BDL 10 1,3-DICHLOROBENZENE BDL BDL 10 1,4-DICHLOROBENZENE BDL BDL 10 3,3'-DICHLOROBENZIDINE BDL BDL 20 DIETHYLPHTHALATE BDL BDL 10 DI-N-BUTYLPHTHALATE BDL BDL 10 1,2-DIPHENYLHYDRAZINE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 2,6-DINITROTOLUENE BDL BDL 10 DI-N-OCTYLPHTHALATE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORENE BDL BDL 10 FLUORENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROSUTADIENE BDL BDL 10 HEXACHLOROSUTADIENE BDL BDL 10 HEXACHLOROSTHANE BDL BDL 10 HEXACHLOROSTHANE BDL BDL 10 HEXACHLOROSTHANE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 ISOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NAPHTHALENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PHENANTHRENE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE	CHRYSENE	BDL	BDL	10
1,3-DICHLOROBENZENE BDL BDL 10 1,4-DICHLOROBENZENE BDL BDL 10 3,3'-DICHLOROBENZIDINE BDL BDL 20 DIETHYLPHTHALATE BDL BDL 10 DIMETHYL PHTHALATE BDL BDL 10 DIMETHYL PHTHALATE BDL BDL 10 1,2-DIPHENYLPHTHALATE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 DI-N-OCTYLPHTHALATE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROSUTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 HEXACHLOROSTHANE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 ISOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NAPHTHALENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL BDL 10 PYRENE BDL BDL BDL 10 PYRENE	DIBENZO (A,H) ANTHRACENE	BDL	BDL	10
1,4-DICHLOROBENZENE BDL BDL 20 3,3'-DICHLOROBENZIDINE BDL BDL 20 DIETHYLPHTHALATE BDL BDL 10 DIMETHYL PHTHALATE BDL BDL 10 DI-N-BUTYLPHTHALATE BDL BDL 10 1,2-DIPHENYLHYDRAZINE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 2,6-DINITROTOLUENE BDL BDL 10 DI-N-OCTYLPHTHALATE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROBUTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 INOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10 PDL BDL BDL 10 PYRENE BDL BDL 10 PDL BDL BDL 10 PYRENE BDL BDL BDL 10 PDL BDL BDL 10 PYRENE BDL BDL BDL 10 PYRENE BDL BDL BDL 10 PDL BDL BDL 10 PYRENE BDL BDL BDL 10 PDL BDL BDL 10 PDL BDL BDL 10 PYRENE BDL BDL BDL 10 PDL BDL BDL 10 PYRENE BDL BDL BDL 10 PDL BDL BDL 10 PDL BDL BDL 10 PDL BDL BDL 10 PYRENE BDL BDL BDL 10 PDL BDL BDL 10 PYRENE BDL BDL BDL 10 PDL BDL BDL 10 PYRENE BDL BDL BDL 10 PYRENE BDL BDL BDL 10 PDL BDL BDL 10 PYRENE BDL BDL	1,2-DICHLOROBENZENE	BDL	BDL	10
3,3'-DICHLOROBENZIDINE BDL BDL 10 DIETHYLPHTHALATE BDL BDL 10 DIMETHYL PHTHALATE BDL BDL 10 DI-N-BUTYLPHTHALATE BDL BDL 10 1,2-DIPHENYLHYDRAZINE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 2,6-DINITROTOLUENE BDL BDL 10 DI-N-OCTYLPHTHALATE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROBUTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 HEXACHLOROCTHANE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 ISOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10 PYRENE BDL BDL 10	1,3-DICHLOROBENZENE	BDL	\mathtt{BDL}	10
DIETHYLPHTHALATE DIMETHYL PHTHALATE DIMETHYL PHTHALATE DI-N-BUTYLPHTHALATE BDL BDL 1,2-DIPHENYLHYDRAZINE BDL BDL 2,4-DINITROTOLUENE BDL BDL BDL DI-N-OCTYLPHTHALATE BDL BDL BDL DI-N-OCTYLPHTHALATE BDL BDL BDL BDL BDL BDL BDL BD	1,4-DICHLOROBENZENE	BDL	BDL	10
DIMETHYL PHTHALATE DI-N-BUTYLPHTHALATE DI-N-BUTYLPHTHALATE 1,2-DIPHENYLHYDRAZINE BDL BDL DI-N-BUTYLPHTHALATE BDL BDL BDL DI-N-CTYLPHTHALATE BDL BDL BDL DI-N-CTYLPHTHALATE BDL BDL BDL BDL BDL DI-N-CTYLPHTHALATE BDL BDL BDL BDL BDL BDL BDL BD	3,3'-DICHLOROBENZIDINE	BDL	BDL	20
DI-N-BUTYLPHTHALATE BDL BDL 10 1,2-DIPHENYLHYDRAZINE BDL BDL 10 2,4-DINITROTOLUENE BDL BDL 10 2,6-DINITROTOLUENE BDL BDL 10 DI-N-OCTYLPHTHALATE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 HEXACHLOROETHANE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 ISOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10	DIETHYLPHTHALATE	BDL	BDL	10
1,2-DIPHENYLHYDRAZINE 2,4-DINITROTOLUENE BDL BDL DI-N-OCTYLPHTHALATE BDL BDL BDL BDL BDL DI-N-OCTYLPHTHALATE BDL	DIMETHYL PHTHALATE	BDL	BDL	10
2,4-DINITROTOLUENE BDL BDL 10 2,6-DINITROTOLUENE BDL BDL 10 DI-N-OCTYLPHTHALATE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROGUTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 HEXACHLOROCTHANE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 ISOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10	DI-N-BUTYLPHTHALATE	BDL	BDL	10 .
2,6-DINITROTOLUENE BDL BDL 10 DI-N-OCTYLPHTHALATE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROGUTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 ISOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10 PYRENE	1,2-DIPHENYLHYDRAZINE	BDL	BDL	10
DI-N-OCTYLPHTHALATE BDL BDL 10 FLUORANTHENE BDL BDL 10 FLUORENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROBUTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 HEXACHLOROCTHANE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 ISOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROBENZENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10	2,4-DINITROTOLUENE	BDL	BDL	10
FLUORANTHENE BDL BDL 10 FLUORENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROBUTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 HEXACHLOROCTHANE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 I SOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROBENZENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10	2,6-DINITROTOLUENE	BDL	BDL	10
FLUORENE BDL BDL 10 HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROBUTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 HEXACHLOROETHANE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 ISOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROBENZENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE	DI-N-OCTYLPHTHALATE	BDL	BDL	10
HEXACHLOROBENZENE BDL BDL 10 HEXACHLOROGUTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 HEXACHLOROETHANE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 I SOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROBENZENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10	FLUORANTHENE			10
HEXACHLOROBUTADIENE BDL BDL 10 HEXACHLOROCYCLOPENTADIENE BDL BDL 10 HEXACHLOROCTHANE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 ISOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROBENZENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10	FLUORENE	BDL	BDL	10
HEXACHLOROCYCLOPENTADIENE BDL BDL 10 HEXACHLOROETHANE BDL BDL 10 INDENO (1,2,3-CD) PYRENE BDL BDL 10 ISOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROBENZENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10		BDL		
HEXACHLOROETHANE INDENO (1,2,3-CD) PYRENE BDL BDL BDL BDL 10 NAPHTHALENE BDL BDL BDL N-NITROSODI-N-PROPYLAMINE BDL BDL BDL BDL BDL BDL BDL BD		BDL		10
INDENO (1,2,3-CD) PYRENE BDL BDL 10 ISOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROBENZENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10				
I SOPHORONE BDL BDL 10 NAPHTHALENE BDL BDL 10 NITROBENZENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10		BDL		10
NAPHTHALENE BDL BDL 10 NITROBENZENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10	INDENO (1,2,3-CD) PYRENE			
NITROBENZENE BDL BDL 10 N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10				
N-NITROSODI-N-PROPYLAMINE BDL BDL 10 N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10	,			
N-NITROSODIPHENYLAMINE BDL BDL 10 PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10				
PHENANTHRENE BDL BDL 10 PYRENE BDL BDL 10				
PYRENE BDL BDL 10				
1,2,4-TRICHLOROBENZENE BDL BDL 10				
	1,2,4-TRICHLOROBENZENE	BDL	BDL	10

			DETECTION
BASE-NEUTRAL			LIMIT
EXTRACTABLE ORGANICS	CONCENTRATION	(UG/L)	(UG/L)
Client I.D.:	GPT 2-1	GPT 2-2	
JTC I.D.:	87-0268	87-0269	
ACENAPHTHENE	BDL	BDL	10
ACENAPHTHYLENE	BDL	BDL	10
ANTHRACENE	BDL	BDL	10
BENZIDINE	BDL	BDL	50
BENZO (A) ANTHRACENE	BDL	BDL	10
BENZO (A) PYRENE	BDL	BDL	10
BENZO (B) FLUORANTHENE	BDL	BDL	10
BENZO (GHI) PERYLENE	BDL	BDL	10
BENZO (K) FLUORANTHENE	BDL	BDL	10
BIS (2-CHLOROETHOXY) METHANE	BDL	BDL	10
BIS (2-CHLOROETHYL) ETHER	BDL	BDL	10
BIS (2-CHLOROISOPROPYL) ETHER	BDL	BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE	BDL	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	BDL	
			10
BUTYLBENZYLPHTHALATE	BDL	BDL	10
2-CHLORONA PHTHALENE	BDL	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	BDL	10
CHRYSENE	BDL	BDL	10
DIBENZO (A,H) ANTHRACENE	BDL	BDL	10
1,2-DICHLOROBENZENE	BDL	BDL	10
1,3-DICHLOROBENZENE	BDL	BDL	10
1,4-DICHLOROBENZENE	BDL	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	BDL	20
DIETHYLPHTHALATE	BDL	BDL	10
DIMETHYL PHTHALATE	BDL	BDL	10
DI-N-BUTYLPHTHALATE	BDL	BDL	10
1, 2-DIPHENYLHYDRAZINE	BDL	\mathtt{BDL}	10
2,4-DINITROTOLUENE	BDL	BDL	10
2,6-DINITROTOLUENE	\mathtt{BDL}	\mathtt{BDL}	10
DI –N-OCTYLPHTHALATE	\mathtt{BDL}	\mathtt{BDL}	10
FLUORANTHENE	BDL	\mathtt{BDL}	10
FLUORENE	\mathtt{BDL}	\mathtt{BDL}	10
HEXACHLOROBENZENE	BDL	BDL	10
HEXACHLOROBUTADI ENE	BDL	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	\mathtt{BDL}	10
HEXACHLOROETHANE	BDL	BDL	10
INDENO (1,2,3-CD) PYRENE	BDL	BDL	10
ISOPHORONE	BDL	BDL	10
NAPHTHALENE	BDL	BDL	10
NITROBENZENE	BDL	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	BDL	10
N-NITROSODIPHENYLAMINE	BDL	BDL	10
PHENANTHRENE	BDL	BDL	10
PYRENE	BDL	BDL	10
1,2,4-TRICHLOROBENZENE	BDL	BDL	10

			DETECTION
BASE-NEUTRAL			LIMIT
EXTRACTABLE ORGANICS	CONCENTRATION	(UG/L)	(UG/L)
Client I.D.:	GPT 2-3	GPT 3-1	
JTC I.D.:	87-0270	87-0271	
ACENAPHTHENE	BDL	BDL	10
ACENAPHTHYLENE	BDL	BDL	10
ANTHRACENE	BDL	BDL	10
BENZIDINE	BDL	BDL	50
BENZO (A) ANTHRACENE	BDL	BDL	10
BENZO (A) PYRENE	BDL	BDL	10
BENZO (B) FLUORANTHENE	BDL	BDL	10
BENZO (GHI) PERYLENE	BDL	BDL	10
BENZO (K) FLUORANTHENE	BDL	BDL	10
BIS (2-CHLOROETHOXY) METHANE	BDL	BDL	10
•		BDL	10
BIS (2-CHLOROETHYL) ETHER	BDL		
BIS (2-CHLOROISOPROPYL) ETHER	BDL	BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE	21	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	BDL	10
BUTYLBENZYLPHTHALATE	BDL	BDL	10
2-CHLORONAPHTHALENE	BDL	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	BDL	10
CHRYSENE	BDL	BDL	10
DIBENZO (A,H) ANTHRACENE	BDL	BDL	10
1,2-DICHLOROBENZENE	BDL	\mathtt{BDL}	10
1,3-DICHLOROBENZENE	BDL	BDL	10
1,4-DICHLOROBENZENE	BDL	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	\mathtt{BDL}	20
DIETHYLPHTHALATE	BDL	BDL	10
DIMETHYL PHTHALATE	BDL	BDL	10
DI-N-BUTYLPHTHALATE	BDL	BDL	10 .
1,2-DIPHENYLHYDRAZINE	BDL	\mathtt{BDL}	10
2,4-DINITROTOLUENE	BDL	BDL	10
2,6-DINITROTOLUENE	BDL	BDL	10
DI-N-OCTYLPHTHALATE	BDL	\mathtt{BDL}	10
FLUORANTHENE	BDL	BDL	10
FLUORENE	BDL	BDL	10
HEXACHLOROBENZENE	BDL	BDL	10
HEXACHLOROBUTADI ENE	BDL	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	BDL	10
HEXACHLOROETHANE	BDL	BDL	10
INDENO (1,2,3-CD) PYRENE	BDL	BDL	10
I SOPHORONE	BDL	BDL	10
NAPHTHALENE	BDL	BDL	10
NITROBENZENE	BDL	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	BDL	10
	BDL	BDL	10
N-NITROSODIPHENYLAMINE	BDL	BDL	10
PHENANTHRENE		BDL	10
PYRENE	BDL		
1,2,4-TRICHLOROBENZENE	BDL	BDL	10

			DETECTION
BASE-NEUTRAL			LIMIT
EXTRACTABLE ORGANICS	CONCENTRATION		(UG/L)
Client I.D.:	GPT 3-2	GPT 3-3	
JTC I.D.:	<u>87-027 2</u>	87-0273	
ACENAPHTHENE	BDL	BDL	10
ACENAPHTHYLENE	BDL	BDL	10
ANTHRACENE	BDL	BDL	10
BENZIDINE	BDL	BDL	50
BENZO (A) ANTHRACENE	BDL	\mathtt{BDL}	10
BENZO (A) PYRENE	BDL	BDL	10
BENZO (B) FLUORANTHENE	BDL	BDL	10
BENZO (GHI) PERYLENE	BDL	BDL	10
BENZO (K) FLUORANTHENE	BDL	BDL	10
BIS (2-CHLOROETHOXY) METHANE	BDL	BDL	10
BIS (2-CHLOROETHYL) ETHER	BDL	BDL	10
BIS (2-CHLOROISOPROPYL) ETHER	BDL	BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE		BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	BDL	10
BUTYLBENZYLPHTHALATE	BDL	BDL	10
2-CHLORONA PHTHAL ENE	BDL	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	BDL	10
CHRYSENE	BDL	BDL	10
DIBENZO (A, H) ANTHRACENE	BDL	BDL	10
1,2-DICHLOROBENZENE	BDL	BDL	10
1,3-DICHLOROBENZENE	BDL	BDL	10
1,4-DICHLOROBENZENE	BDL	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	BDL	20
DIETHYLPHTHALATE	BDL	BDL	10
DIMETHYL PHTHALATE	BDL	BDL	10
DI-N-BUTYLPHTHALATE	BDL	BDL	10 .
1,2-DIPHENYLHYDRAZINE	BDL	BDL	10
2,4-DINITROTOLUENE	BDL	BDL	10
2,6-DINITROTOLUENE	BDL	BDL	10
DI-N-OCTYLPHTHALATE	BDL	BDL	10
FLUORANTHENE	BDL	BDL	10
FLUORENE	BDL	BDL	10
HEXACHLOROBENZENE	BDL	BDL	10
HEXACHLOROBUTADI ENE	BDL	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	BDL	10
HEXACHLOROETHANE	BDL	BDL	10
INDENO (1,2,3-CD) PYRENE	BDL	BDL	10
ISOPHORONE	BDL	BDL	10
NAPHTHALENE	BDL	BDL	10
NITROBENZENE	BDL	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	BDL	10
	BDL	BDL	10
N-NITROSODIPHENYLAMINE			
PHENANTHRENE	BDL	BDL	10
PYRENE	BDL	BDL	10
1,2,4-TRICHLOROBENZENE	BDL	\mathtt{BDL}	10

BDL=BELOW DETECTION LIMIT

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14	220 43	DETECTION
BASE-NEUTRAL		LIMIT
EXTRACTABLE ORGANICS	CONCENTRATION (UG/L)	(UG/L)
Client I.D.:	GPT 4-1	(00/11)
JTC I.D.:		
	87-0274	10
ACENAPHTHENE	BDL	
ACENAPHTHYLENE	BDL	10
ANTHRACENE	BDL	10
BENZIDINE	BDL	50
BENZO (A) ANTHRACENE	BDL	10
BENZO (A) PYRENE	BDL	10
BENZO (B) FLUORANTHENE	BDL	10
BENZO (GHI) PERYLENE	BDL	10
BENZO (K) FLUORANTHENE	BDL	10
BIS (2-CHLOROETHOXY) METHANE	BDL	10
BIS (2-CHLOROETHYL) ETHER	BDL	10
BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	10
BUTYLBENZYLPHTHALATE	BDL	10
2-CHLORONA PHTHAL ENE	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	10
CHRYSENE	BDL	10
	BDL	10
DIBENZO (A,H) ANTHRACENE		10
1,2-DICHLOROBENZENE	BDL	10
1,3-DICHLOROBENZENE	BDL	
1,4-DICHLOROBENZENE	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	20
DI ETHYLPHTHALATE	BDL	10
DIMETHYL PHTHALATE	BDL	10 .
DI-N-BUTYLPHTHALATE	BDL	10
1,2-DIPHENYLHYDRAZINE	BDL	10
2,4-DINITROTOLUENE	BDL	10
2,6-DINITROTOLUENE	BDL	10
DI -N-OCTYLPHTHALATE	BDL	10
FLUORANTHENE	BDL	10
FLUORENE	BDL	10
HEXACHLOROBENZENE	BDL	10
HEXACHLOROBUTADI ENE	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	10
HEXACHLOROETHANE	BDL	10
INDENO (1,2,3-CD) PYRENE	BDL	10
ISOPHORONE	BDL	10
NAPHTHALENE	BDL	10
NITROBENZENE	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	10
N-NITROSODIPHENYLAMINE	BDL	10
PHENANTHRENE	BDL	10
PYRENE	BDL	10
1,2,4-TRICHLOROBENZENE	BDL	10
1,2,4-IRICHLOROBENZENE	BULL	10
BDL=BELOW DETECTION LIMIT		
BUL-BELOW DETECTION LIMIT		

		DETECTION
BASE-NEUTRAL		LIMIT
EXTRACTABLE ORGANICS	CONCENTRATION (UG/L)	(UG/L)
Client I.D.:	GPT4 4-2	
JTC I.D.:	<u>87-0275</u>	
ACENAPHTHENE	BDL	10
ACENAPHTHYL <u>E</u> NE	BDL	10
ANTHRACENE	BDL	10
BENZIDINE	BDL	50
BENZO (A) ANTHRACENE	BDL	10
BENZO (A) PYRENE	BDL	10
BENZO (B) FLUORANTHENE	BDL	10
BENZO (GHI) PERYLENE	BDL	10
BENZO (K) FLUORANTHENE	BDL	10
BIS (2-CHLOROETHOXY) METHANE	BDL	10
BIS (2-CHLOROETHYL) ETHER	BDL	, 10
BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	10
BUTYLBENZYLPHTHALATE	BDL	10
2-CHLORONAPHTHALENE	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	10
CHRYSENE	BDL	10
DIBENZO (A, H) ANTHRACENE	BDL	10
1,2-DICHLOROBENZENE	BDL	10
1,3-DICHLOROBENZENE	BDL	10
1,4-DICHLOROBENZENE	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	20
DIETHYLPHTHALATE	BDL	10
DIMETHYL PHTHALATE	BDL	10
DI-N-BUTYLPHTHALATE	BDL	10 .
1,2-DIPHENYLHYDRAZINE	BDL	10
2,4-DINITROTOLUENE	BDL	10
2,6-DINITROTOLUENE	BDL	10
DI-N-OCTYLPHTHALATE	BDL	10
FLUORANTHENE	BDL	10
FLUORENE	BDL	10
HEXACHLOROBENZENE	BDL	10
HEXACHLOROBUTADI ENE	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	10
HEXACHLOROETHANE	BDL	10
INDENO (1,2,3-CD) PYRENE	BDL	10
ISOPHORONE	BDL	10
NAPHTHALENE	BDL	10
NITROBENZENE	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	10
N-NITROSODIPHENYLAMINE	BDL	10
PHENANTHRENE	BDL	10
PYRENE	BDL	10
1, 2, 4-TRICHLOROBENZENE	BDL	10

<u>-</u>			DETECTION
BASE-NEUTRAL			LIMIT
EXTRACTABLE ORGANICS	CONCENTRAT	ION (UG/L)	(UG/L)
Client I.D.:	GPT 4-3	GPT 5-1	
JTC I.D.:	87-0343	87-0277	
ACENAPHTHENE	BDL	BDL	10
ACENAPHTHYLENE	BDL	BDL	10
ANTHRACENE	\mathtt{BDL}	BDL	10
BENZIDINE	BDL	BDL	50
BENZO (A) ANTHRACENE	BDL	BDL	10
BENZO (A) PYRENE	BDL	BDL	10
BENZO (B) FLUORANTHENE	BDL	BDL	10
BENZO (GHI) PERYLENE	BDL	BDL	10
BENZO (K) FLUORANTHENE	BDL	BDL	10
BIS (2-CHLOROETHOXY) METHANE	BDL	BDL	10
BIS (2-CHLOROETHYL) ETHER	BDL	BDL	10
BIS (2-CHLOROISOPROPYL) ETHER	BDL	BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE	BDL	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	BDL	10
BUTYLBENZYLPHTHALATE	BDL	BDL	10
2-CHLORONA PHTHALENE	BDL	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	BDL	10
CHRYSENE	BDL	BDL	10
DIBENZO (A, H) ANTHRACENE	BDL	BDL	10
1,2-DICHLOROBENZENE	BDL	BDL	10
1,3-DICHLOROBENZENE	BDL	BDL	10
1,4-DICHLOROBENZENE	BDL	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	BDL	20
DI ETHYLPHTHALATE	BDL	BDL	10
DIMETHYL PHTHALATE	BDL	BDL	10
DI-N-BUTYLPHTHALATE	BDL	BDL	10 .
1,2-DIPHENYLHYDRAZINE	BDL	BDL	10
2,4-DINITROTOLUENE	BDL	BDL	10
2,6-DINITROTOLUENE	BDL	BDL	10
DI -N-OCTYLPHTHALATE	BDL	BDL	10
	BDL	BDL	10
FLUORANTHENE	BDL	BDL	10
FLUORENE			
HEXACHLOROBENZENE	BDL	BDL	10
HEXACHLOROBUTADI ENE	BDL	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	BDL	10
HEXACHLOROETHANE	BDL	BDL	10
INDENO (1,2,3-CD) PYRENE	BDL	BDL	10
ISOPHORONE	BDL	BDL	10
NAPHTHALENE	BDL	BDL	10
NITROBENZENE	BDL	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	BDL	10
N-NITROSODIPHENY LAMINE	BDL	BDL	10
PHENANTHRENE	BDL	BDL	10
PYRENE	BDL	BDL	10
1,2,4-TRICHLOROBENZENE	BDL	BDL	10

			DETECTION
BASE-NEUTRAL		`	LIMIT
EXTRACTABLE ORGANICS	CONCENTRAT	ION (UG/L)	(UG/L)
Client I.D.:	GPT 5-2	GPT 5-3	
JTC I.D.:	87-0278	87-0279	
ACENAPHTHENE	BDL	BDL	10
ACENAPHTHYLENE	BDL	BDL	10
ANTHRACENE	BDL	BDL	10
BENZIDINE	BDL	BDL	50
BENZO (A) ANTHRACENE	BDL	BDL	10
BENZO (A) PYRENE	BDL	BDL	10
BENZO (B) FLUORANTHENE	BDL	BDL	10
BENZO (GHI) PERYLENE	BDL	BDL	10
BENZO (K) FLUORANTHENE	BDL	BDL	10
BIS (2-CHLOROETHOXY) METHANE	BDL	BDL	10
BIS (2-CHLOROETHYL) ETHER	BDL	BDL	10
BIS (2-CHLOROISOPROPYL) ETHER	BDL	BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE	BDL	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	BDL	10
BUTYLBENZYLPHTHALATE	BDL	BDL	10
2-CHLORONA PHTHALENE	BDL	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	BDL	10
CHRYSENE	BDL	BDL	10
DIBENZO (A,H) ANTHRACENE	BDL	BDL	10
1,2-DICHLOROBENZENE	BDL	BDL	10
1,3-DICHLOROBENZENE	BDL	BDL	10
1,4-DICHLOROBENZENE	BDL	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	BDL	20
DIETHYLPHTHALATE	BDL	BDL	10
DIMETHYL PHTHALATE	BDL	BDL	10
DI-N-BUTYLPHTHALATE	BDL	BDL	10 ·
1,2-DIPHENYLHYDRAZINE	BDL	BDL	10
2,4-DINITROTOLUENE	BDL	BDL	10
2,6-DINITROTOLUENE	BDL	BDL	10
DI-N-OCTYLPHTHALATE	BDL	BDL	10
FLUORANTHENE	BDL	BDL	10
FLUORANTHEME	BDL	BDL	10
HEXACHLOROBENZENE	BDL	BDL	10
HEXACHLOROBUTADI ENE	BDL	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	BDL BDL	10
HEXACHLOROETHANE	BDL		10
INDENO (1,2,3-CD) PYRENE	BDL	BDL	10 10
I SOPHORONE	BDL	BDL	10
NAPHTHALENE	BDL	BDL	10
NITROBENZENE	BDL	BDL	
N-NITROSODI-N-PROPYLAMINE	BDL	BDL	10
N-NITROSODIPHENYLAMINE	BDL	BDL	10
PHENANTHRENE	BDL	BDL	10
PYRENE	BDL	BDL	10
1,2,4-TRICHLOROBENZENE	BDL	BDL	10

Tal			
			DETECTION
BASE-NEUTRAL			LIMIT
EXTRACTABLE ORGANICS	CONCENTRATION	(UG/L)	(UG/L)
Client I.D.:	GPT 6-1	GPT 6-2	
JTC I.D.:	87-0344	87-0281	
ACENAPHTHENE	BDL	BDL	10
ACENAPHTHYLENE	BDL	BDL	10
ANTHRACENE	BDL	BDL	10
BENZIDINE	BDL	BDL	50
BENZO (A) ANTHRACENE	BDL	BDL	10
BENZO (A) PYRENE	BDL	BDL	10
BENZO (B) FLUORANTHENE	BDL	BDL	10
BENZO (GHI) PERYLENE	BDL	BDL	10
BENZO (K) FLUORANTHENE	BDL	\mathtt{BDL}	10
BIS (2-CHLOROETHOXY) METHANE	BDL	BDL	10
BIS (2-CHLOROETHYL) ETHER	BDL	BDL	10
BIS (2-CHLOROISOPROPYL) ETHER	BDL	BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE	BDL	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	BDL	10
BUTYLBENZYLPHTHALATE	BDL	BDL	10
2-CHLORONAPHTHALENE	BDL	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	BDL	10
CHRYSENE	BDL	BDL	10
DIBENZO (A,H) ANTHRACENE	BDL	BDL	10
1,2-DICHLOROBENZENE	BDL	BDL	10
1,3-DICHLOROBENZENE	BDL	BDL	10
1,4-DICHLOROBENZENE	BDL	\mathtt{BDL}	10
3,3'-DICHLOROBENZIDINE	BDL	\mathtt{BDL}	20
DI ETHYLPHTHALATE	BDL	BDL	10
DIMETHYL PHTHALATE	BDL	BDL	10
DI-N-BUTYLPHTHALATE	BDL	BDL	10 .
1,2-DIPHENYLHYDRAZINE	BDL	BDL	10
2,4-DINITROTOLUENE	BDL	\mathtt{BDL}	10
2,6-DINITROTOLUENE	BDL	BDL	10
DI-N-OCTYLPHTHALATE	BDL	BDL	10
FLUORANTHENE	BDL	BDL	10
FLUORENE	BDL	BDL	10
HEXACHLOROBENZENE	BDL	BDL	10
HEXACHLOROBUTADI ENE	BDL	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	BDL	10
HEXACHLOROETHANE	BDL	BDL	10
INDENO (1,2,3-CD) PYRENE	BDL	BDL	10
ISOPHORONE	BDL	BDL	10
NAPHTHALENE	BDL	BDL	10
NITROBENZENE	BDL	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	BDL	10
N-NITROSODIPHENYLAMINE	BDL	BDL	10
PHENANTHRENE	BDL	BDL	10
PYRENE	BDL	BDL	10
1,2,4-TRICHLOROBENZENE	BDL	BDL	10

			DETECTION
BASE-NEUTRAL			LIMIT
EXTRACTABLE ORGANICS	CONCENTRATION		(UG/L)
Client I.D.:	GPT 6-3	Decon 1	
JTC I.D.:	87-0282	<u>87-0283</u>	
ACENAPHTHENE	BDL	BDL	10
ACENAPHTHYLENE	BDL	BDL	10
ANTHRACENE	BDL	\mathtt{BDL}	10
BENZIDINE	BDL	BDL	50
BENZO (A) ANTHRACENE	BDL	BDL	10
BENZO (A) PYRENE	BDL	BDL	10
BENZO (B) FLUORANTHENE	BDL	BDL	10
BENZO (GHI) PERYLENE	BDL	BDL	10
BENZO (K) FLUORANTHENE	BDL	BDL	10
BIS (2-CHLOROETHOXY) METHANE	BDL	BDL	10
BIS (2-CHLOROETHYL) ETHER	BDL	\mathtt{BDL}	10
BIS (2-CHLOROISOPROPYL) ETHER	BDL	\mathtt{BDL}	10
BIS (2-ETHYLHEXYL) PHTHALATE	BDL	BDL	10
4-BROMOPHENYL PHENYL ETHER	BDL	BDL	10
BUTYLBENZYLPHTHALATE	BDL	BDL	10
2-CHLORONAPHTHALENE	BDL	\mathtt{BDL}	10
4-CHLOROPHENYL PHENYL ETHER	BDL	BDL	10
CHRYSENE	BDL	BDL	10
DIBENZO (A,H) ANTHRACENE	BDL	BDL	10
1,2-DICHLOROBENZENE	BDL	BDL	10
1,3-DICHLOROBENZENE	BDL	BDL	10
1,4-DICHLOROBENZENE	BDL	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	BDL	20
DIETHYLPHTHALATE	BDL	BDL	10
DIMETHYL PHTHALATE	BDL	BDL	10
DI-N-BUTYLPHTHALATE	BDL	BDL	10 .
1,2-DIPHENYLHYDRAZINE	BDL	BDL	10
2,4-DINITROTOLUENE	BDL	BDL	10
2,6-DINITROTOLUENE	BDL	BDL	10
DI -N-OCTYLPHTHALATE	BDL	BDL	10
FLUORANTHENE	BDL	BDL	10
FLUORENE	BDL	BDL	10
HEXACHLOROBENZENE	BDL	BDL	10
HEXACHLOROBUTADI ENE	BDL	BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	BDL	10
HEXACHLOROETHANE	BDL	BDL	10
INDENO (1,2,3-CD) PYRENE	BDL	BDL	10
I SOPHORONE	BDL	BDL	10
NAPHTHALENE	BDL	BDL	10
NITROBENZENE	BDL	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	BDL	10
N-NITROSODIPHENYLAMINE	BDL	BDL	10
PHENANTHRENE	BDL	BDL	10
PYRENE	BDL	BDL	10
1,2,4-TRICHLOROBENZENE	BDL	BDL	10
1,2,7-IRICHLOROBENAENE	חמם	ששפ	10

		DETECTION
BASE-NEUTRAL		LIMIT
EXTRACTABLE ORGANICS	CONCENTRATION (UG/L)	(UG/L)
Client I.D.:	Decon 2	
JTC I.D.:	87-0284	
ACENAPHTHENE	BDL	10
ACENAPHTHYLENE	BDL	10
ANTHRACENE	BDL	10
BENZIDINE	BDL	50
BENZO (A) ANTHRACENE	BDL	10
BENZO (A) PYRENE	BDL	10
BENZO (B) FLUORANTHENE	BDL	10
BENZO (GHI) PERYLENE	BDL	10
BENZO (K) FLUORANTHENE	BDL	10
BIS (2-CHLOROETHOXY) METHANE	BDL	10
BIS (2-CHLOROETHYL) ETHER	BDL ²	10
BIS (2-CHLOROISOPROPYL) ETHER	BDL	10
BIS (2-ETHYLHEXYL) PHTHALATE	BDL	10
· · · · · · · · · · · · · · · · · · ·	BDL	10
4-BROMOPHENYL PHENYL ETHER		
BUTYLBENZYLPHTHALATE	BDL	10
2-CHLORONAPHTHALENE	BDL	10
4-CHLOROPHENYL PHENYL ETHER	BDL	10
CHRYSENE	BDL	10
DIBENZO (A,H) ANTHRACENE	BDL	10
1,2-DICHLOROBENZENE	BDL	10
1,3-DICHLOROBENZENE	BDL	10
1,4-DICHLOROBENZENE	BDL	10
3,3'-DICHLOROBENZIDINE	BDL	20
DIETHYLPHTHALATE	BDL	10
DIMETHYL PHTHALATE	BDL	10
DI -N-BUTYLPHTHALATE	BDL	10 .
1,2-DIPHENYLHYDRAZINE	BDL	10
2,4-DINITROTOLUENE	BDL	10
2,6-DINITROTOLUENE	BDL	10
DI -N-OCTYLPHTHALATE	BDL	10
FLUORANTHENE	BDL	10
FLUORENE	BDL	10
HEXACHLOROBENZENE	BDL	10
HEXACHLOROBUTADI ENE	. BDL	10
HEXACHLOROCYCLOPENTADIENE	BDL	10
HEXACHLOROETHANE	BDL	10
INDENO (1,2,3-CD) PYRENE	BDL	10
I SOPHORONE	BDL	10
NA PHTH ALENE	BDL	10
NITROBENZENE	BDL	10
N-NITROSODI-N-PROPYLAMINE	BDL	10
N-NITROSODIPHENYLAMINE	BDL	10
PHENANTHRENE	BDL	10
PYRENE	BDL	10
1,2,4-TRICHLOROBENZENE	BDL	10
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RESULTS OF METALS ANALYSES

JTC DATA REPORT 87-147

TABLE 52

GROUND AND SURFACE WATER SAMPLES

JTC ID	HLA ID	Cd ug/l	Cr ug/l	Pb ug/l
87-0242 87-0242 Dup	Site 2: S. Drainage Ditch	<4.7 <4.7	<7.8 <7.8	<5.0 <5.0
87-0261 87-0261 Dup	GPT 1-1 1.	<4.7 <4.7	136 165	52 61
87-0262 87-0262 Dup	GPT 1-2 1.	<4.7 <4.7	392 415	79 70
87-0263	GPT 1-3	<4.7	81	66
87-0264	Site 1: N. Catfish Pond	<4.7	<7.8	<5.0
87-0265	Site 1: Ditch SW of 139	<4.7	<7.8	<5.0
87-0266	Site 1: W. Drainage Ditch	<4.7	<7.8	<5.0
87-0267	Site 1: S. Catfish Pond	<4.7	<7.8	<5.0
87-0268	GPT 2-1	<4.7	26	20
87-0269	GPT 2-2	<4.7	73	41
87-0270	GPT 2-3	<4.7	21	13
87-0271	GPT 3-1	<4.7	40	26
87-0272	GPT 3-2	<4.7	71	35
87-0273	GPT 3-3	<4.7	45	17
87-0274	GPT 4-1	<4.7	72	50
87-0275	GPT 4-2	<4.7	22	5.4

RESULTS OF METALS ANALYSES

JTC DATA REPORT 87-147

TABLE 53

GROUND AND SURFACE WATER SAMPLES

JTC ID	HLA ID	Cd _ug/l	Cr ug/l	Pb ug/l
87-0276	GPT 4-3	<4.7	155	124
87-0277	GPT 5-1	<4.7	79 [;]	39
87-0278	GPT 5-2	<4.7	104	48
87-0279	GPT 5-3	<4.7	91	35
87-0281	GPT 6-2	<4.7	38	21
87-0282	GPT 6-3	<4.7	30	26
87-0340 87-0340 Dup	Site 3: S. Drainage Ditch	<4.7 <4.7	<7.8 •<7.8	<5.0 <5.0
87-0341	Site 4: Canal 1	<4.7	<7.8	<5.0
87-0342	Site 5: S. Drainage Ditch	21	<7.8	<5.0
87-0344	GPT 6-1	<4.7	72	70

RESULTS OF METALS ANALYSES JTC DATA REPORT 87-147 TABLE 54

GROUND WATER SAMPLES

JTC ID	HLA ID	Cd _ug/1_	Cr _ug/l_	Pb ug/l
87-0249	Well # 1	<4.7	<7.8	<5.0
87-0250	Well # 2	<4.7	<7.8	<5.0
87-0251	Well # 3	<4.7	<7.8	<5.0
87-0252	Well # 4	<4.7	<7.8	<5.0
87-0253	Well # 5	<4.7	9.0	<5.0

RESULTS OF METALS ANALYSES ON SOIL SAMPLES

JTC DATA REPORT 87-147

TABLE 55

JTC ID	HLA ID	Cd mg/kg	Cr mg/kg	Pb mg/kg
87-0244 87-0244 Dupl	Site 2: Ṣ. Drainag •	ge Ditch <2.9 <2.9	4.9 <4.8	4.7 3.7
87-0257	Site 4: Canal # 1	<4.6	19	39
87-0258	Site 5: S. Drainag	e Ditch <3.0	<5.0	<3.2
87-0246	Site 6: W. Drainag	ge Ditch <3.1	<5.9	4.1
87-0247	Site 6: W. of S. F	rit <2.6	5.4	<3.3
87-0248	Site 6: W. of N. F	Pit <2.6	7.7	6.9
87-0286 87-0286 Dupl	Site l: N. Catfish	Pond <3.1 <3.1	7.2 6.6	<3.3 <3.3
87-0287	Site l: S. Catfish	Pond <3.2	<5.2	<3.4
87-0288	Site l: W. Drainag	ge Ditch <3.2	<5.3	<3.4
87-0289	Site 1: Ditch S. W Building 1	_	7.3	<3.∙0

RESULTS OF METALS ANALYSES ON DECON WATER SAMPLES

JTC DATA REPORT 87-147

TABLE 56

JTC ID	HLA ID	Cd ug/1	Cr ug/l	Pb ug/l
87-0283	Decon 1	<4.7	<7.8	<5.0
87-0284	Decon 2	<4.7	<7.8	<5.0

APPENDIX E

Final Quality Assurance

and

Quality Control Report

FINAL QUALITY ASSURANCE AND QUALITY CONTROL REPORT FOR ANALYSES CONDUCTED BY JTC ENVIRONMENTAL CONSULTANTS, INC. FOR THE NACIP STUDY AT NCBC, GULFPORT, MISSISSIPPI

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FORWARD

In accordance with the Sampling and Chemical Analysis Quality Assurance Guide for Navy Assessment and Control of Installation Pollutants Program (NEESA publication 20.2-047), JTC Environmental Consultants, Inc. (JTC), is submitting a final report on quality control. This report covers all samples analyzed by JTC as a subcontractor to Harding Lawson Associates on the NCBC Gulfport, Mississippi site.

The Quality Assurance/Quality Control program at JTC has been under the direct responsibility of Ms. Karen Forstrom, Quality Assurance Officer, during the acquisition of Harding Lawson Associates data. This report is respectfully submitted by:

Karen A. Forstrom

Quality Assurance Officer

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1.0 LABORATORY OPERATIONS

1.1 Sampling

JTC provided containers to Harding Lawson Associates (HLA) for sample collection. HLA was responsible for all sample collection and documentation of sample locations. JTC was not involved in any of these activities and, therefore, will not report on any QA/QC activities regarding sampling or field collection procedures. JTC did provide HLA with trip blanks for volatile organic compound analyses. Trip blanks were provided with each set of sample collection containers. The analysis of all trip blanks showed no organic compounds found above the detection limit. A table indicating sample locations as provided by HLA is included in Appendix A.

1.2 Requested Changes in Analytical Methods

During the operation of this analytical program, no changes were made in analytical methods. A summary of all analytical requirements for HLA samples is provided in Appendix D.

1.3 Changes in Equipment or in Equipment Operational Procedure

During the performance of this analytical program, no changes were made in equipment or operational procedures.

1.4 Number of Samples Forecast for Next Calendar Month

This is a final report and no additional samples are projected.

2.0 CONTROL CHART STATUS

In accordance with JTC's submitted and approved laboratory QA/QC plan for this project, part of our quality control documentation has been prepared in accordance with EPA quality control requirements. The use of EPA quality control forms as quality control charts are applicable to the following analyses:

- o Volatile priority pollutants
- o Acid/Base-Neutral priority pollutants
- o Pesticides/PCBs
- o Metals (Cd, Cr, Pb)

The quality control charts for these parameters include the following forms:

Inorganics (Metals)

Form II Initial and continuing calibration verification

Form III Blanks

Form IV ICP interference check sample

Form V Spike sample recovery

Form VI Duplicates

Form VII Instrument detection limits and laboratory control sample

Form VIII Standard addition results

Organics (Volatiles, Acid/Base-Neutrals, and Pesticides/PCBs)

Form II	Water surrogate percent recovery summary
Form III	Water matrix spike/matrix spike duplicate recovery
Form IV	Method blank summary
Form V	GC/MS tuning and mass calibration
Form VI	GC/MS initial calibration data
Form VII	GC/MS continuing calibration check
Form IX	Pesticide/PCB standards summary
Form X	Pesticide/PCB Identification Form

An explanation of all EPA forms utilized is provided in Appendix E.

In addition to the EPA forms listed above, quality control charts for precision and accuracy are established using JTC-generated control data. JTC control charts were applied to the following parameters:

- o Total organic carbon (TOC)
- o Total organic halogen (TOX)
- o Oil and grease (O&G)
- o pH
- o Specific Conductivity (CON)
- o Chemical oxygen demand (COD)
- o Metals
 - oo Cd oo Cr oo Pb

- o Acid/Base-Neutral Organics (BNA)
- o Volatile Organics (VOA)
- o Pesticide/PCBs (Pest/PCB)

These charts have been prepared by calculating the mean and the standard deviation of the percent recovery for multiple standards and spikes of the given parameter, and the percent reproducibility (%RPD) for duplicate sets: $RPD = (S-D)/(S+D)/2 \times 100$. The control limits are determined as the mean value ± 3 times the standard deviation, and the warning limits equal the mean value ± 2 times the standard deviation. All charts are provided in Appendix B and a summary of the QA/QC requirements used for HLA samples is provided in Appendix D.

2.1 Number and Identity of Charts Enclosed

The following is a list of the charts and respective chart numbers included in this report. Accompanying each JTC quality control chart is a cover sheet specifying the parameter, control sample type, control limits (Upper Control Limit - UCL, Lower Control Limit - LCL, Upper Warning Limit-UWL, Lower Warning Limit - LWL), dates covered, matrix type, analytical method, and analyst(s) to which the chart applies.

Chart No. Description

Total Organic Carbon

TOC-1	Percent 1	RPD of	Duplicate	Water	Samples
-------	-----------	--------	-----------	-------	---------

TOC-2 Percent RPD of Duplicate Soil Samples

TOC-3 Percent Recovery of EPA Reference Standards

Total Organic Halogen

TOX-1 Percent RPD of Duplicate Samples

TOX-2 Percent Recovery of Standards

Oil & Grease

O&G-l Percent RPD of Duplicate Samples

O&G-2 Percent Recovery of EPA Reference Standards

рĦ Percent RPD of Duplicate Samples pH-1A Percent RPD of Duplicate Samples pH-1B Percent Recovery of EPA Reference Standards pH-2 Specific Conductivity CON-1 Percent RPD of Duplicate Samples CON-2 Percent Recovery of EPA Reference Standards Chemical Oxygen Demand COD-1 Percent RPD of Duplicate Samples COD-2 Percent Recovery of EPA Reference Standards COD-3 Percent Recovery of Spiked Water Samples Metals (Cd, Cr, Pb) Cd-1 Percent Recovery of Method Blank Spike Cr-1 Percent Recovery of Method Blank Spike Pb-1 Percent Recovery of Method Blank Spike Acid/Base-Neutrals (Semi-volatile Organics) BNA-1 Method Blank Surrogate Recovery of Phenol-d5 BNA-2 Method Blank Surrogate Recovery of Nitrobenzene BNA-3 Method Blank Surrogate Recovery of 2-Fluorophenol BNA-4 Method Blank Surrogate Recovery of 2-Fluorobiphenyl

Tribromophenol

Method Blank Surrogate Recovery of Terphenyl-dl4

Method Blank Surrogate Recovery of 2,4,6-

BNA-5

BNA-6

Volatile Organics

VOA-1 Method Blank Surrogate Recovery of Toluene-d8

VOA-2 Method Blank Surrogate Recovery of 1,2-

dichloroethane-d4

VOA-3 Method Blank Surrogate Recovery of

Bromofluorobenzene

EPA Inorganic Control Forms

Form II Initial and continuing calibration verification

Form III Blanks

Form IV ICP interference check sample

Form V Spike sample recovery

Form VI Duplicates

Form VII Instrument detection limits and laboratory control

sample

Form VIII Standard addition results

EPA Organic Control Forms

Form II Water surrogate percent recovery summary

Form III Water matrix spike/matrix spike duplicate recovery

Form IV Method blank summary

Form V GC/MS tuning and mass calibration

Form VI GC/MS initial calibration data

Form VII GC/MS continuing calibration check

Form IX Pesticide/PCB standards summary

Form X Pesticide/PCB Identification Form

There was not enough JTC control data available to calculate control limits for COD soil spike recovery or percent recovery of EPA reference standards utilizing the soils method. Therefore, EPA-generated control limits were applied.

2.2 Shifts, Trends and Biases Indicated by Charts

None

2.3 New Quality Control Procedure

At the suggestion of Ms. Mitzi Miller of Martin Marietta, JTC's original QA/QC plan for the analysis of HLA samples was revised to include the generation of control charts for method blank spike recovery for metals (Cr, Cd, Pb) and method blank surrogate recovery for organics (volatile organics, acid/base-neutrals). These charts were generated and control limits established prior to the initiation of analysis of HLA samples.

2.4 Changes in Limits

The control charts for precision, submitted to Martin Marietta in March for their review and approval, used the industrial statistic I as a measure of precision:

$$[I = (A+B)/(A-B)].$$

However, since the laboratory personnel are more familiar with percent reproducibility (%RPD) as a measurement of precision, the limits were recalculated using %RPD values:

$$[\$RPD = ([A-B]/[A+B]/2) \times 100].$$

Although the values calculated and limits generated are different, the relation of the values to the limits remains unchanged.

3.0 OUT-OF-CONTROL INCIDENTS

Throughout the duration of this project, JTC experienced two out-of-control incidents involving HLA samples. The first incident involved surrogate recovery outside control limits for two acid/base-neutral samples (JTC I.D. 87-0252 and 87-0268). A situation alert was initiated (SA-HLA1) and the matter investigated by Ms. Ann Rosecrance, Laboratory Director; Ms. Karen Forstrom, Quality Assurance Officer; and the members of the GC/MS staff. It was determined that the out-of-control surrogate recovery for both samples was the result of error in the sample

preparation procedure. Sample 87-0252 was re-extracted and reanalyzed and satisfactory surrogate recovery was obtained. As there was an insufficient amount of sample 87-0268 remaining, it could not be re-extracted. The original extract, however, was reanalyzed and similarly high acid surrogate values were obtained. Since it was determined that the high acid surrogate recovery was the result of the sample preparation chemist erroneously adding the surrogate compound solution to the sample twice, and since the sample contained no detectable acid/baseneutral target compounds, the data was reported to the client. The data, however, was flagged in the report and an explanatory note provided to the client.

The second out-of-control incident concerned the pesticide analysis. Poor recovery was obtained for two compounds, endrin and dieldrin, in the method blank spike that was run with the sample set. A situation alert was initiated (SA-HLA2) and the matter investigated by Ms. Ann Rosecrance, Ms. Karen Forstrom, and the members of the GC staff. Upon completion of the investigation, it was evident that the problem was the result of a bad spiking solution. A new spiking solution was made and analyzed prior to use to ensure that it was satisfactory. Although the problem was isolated to the spike and the samples were not affected, the samples were re-extracted and reanalyzed and satisfactory spike recovery was obtained for all compounds.

Two other incidents occurred during the course of the project which, although not considered out-of-control by definition, warranted inquiry.

The first such incident occurred with one TOC sample (JTC I.D. 87-0286). All TOC samples are run twice and the %RPD calculated. The RPD of this sample was 44%. Although this value was within the JTC-established control limits for TOC soils, it exceeded established warning limits. As the set limits for %RPD of TOC soils are extremely wide, the Quality Assurance Officer requested that the samples be reanalyzed. The wide variation in results for this sample was attributed to the inhomogeneity of the sample matrix. It was, therefore, suggested that the analyst take special care to mix the samples as thoroughly as possible in order to obtain more consistent and representative results. The analysis was repeated twice and a more satisfactory RPD of 16% was obtained.

The second item of concern was the relatively high conductivity readings for samples 87-0283 and 87-0343 (JTC I.D.). Sample 87-0283, a decontamination water sample, had a reading of 490 umhos, and 87-0343, a groundwater sample, had a reading of 1600 umhos. Since one would expect relatively low conductivity readings for these samples, the Project Manager requested that the analyses be repeated. The second conductivity readings were

similar to those originally obtained and, therefore, it was determined that the high conductivity readings were not the result of analytical error.

A complete corrective action report, addressing each of the out-of-control incidents described above, is provided in Appendix C. Each report describes in detail the nature of the problem, the specifics of the investigation, and the corrective action taken.

3.1 Identification of Corrective Action Reports

Report No. Description

CR-HLAl Acid/Base-neutral Surrogate Recovery (Samples 87-0252, 87-0268)

CR-HLA2 Pesticide Blank Spike Recovery (All samples)

3.2 Changes in Procedures Arising From Out-of-Control Incidents

None

4.0 QA/QC PLAN CHANGES

Changes are presented in Section 2.3, New Procedures in Quality Control.

5.0 INVENTORY

All data will be stored for five years at JTC's facility. Storage will be in "banker's" boxes and will include the following: raw data, sample lists, notebooks, worksheets and automated data printouts. Quality control records such as QC charts and corrective action logs will be filed in the office of the Quality Assurance Officer for JTC.

APPENDIX A SAMPLE LOCATIONS AND PARAMETERS

PARAMETERS ANALYZED FOR GROUND WATER SAMPLES

Pest./	PCBs	;	ŀ	!	ļ	:	l I	!	i I	1	!	ļ	1	I i	:	1	ŀ	1	!	×	×	×	1	1 1	1	1	!
Vola-	tiles	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	1	×	×	×	×	×	×	×	×
Acids/ Base	Neutrals	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	ı	×	×	×	×	×	×	×	×
, cd,	Cr, Pb	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	ι	×	×	×	×	×	×	×	×	×
	0 & G	!	!	l l	!	l I	1	!	;	:		!	1	!	!	-	;	1	;	;	;	1	i	!	;	ļ	1
	COD	1	į	1	1	ļ	1	}	ľ	1	;	!	i	1	i	1	1	1	ļ	!	1	1	1	i	!	1	1
	TOX	¦	ŀ	!	;	i	1	1	1	1	}	!	!	i I	!	!	ł	1	;	1	1	!	1	1 1	!	!	i I
	TOC	ł	i	i i	ŀ	1	1	1	ŀ	1	1	1	!	¦	!	!	1	ļ	!	! l	1	1	1	!	1	!	i
Spec.	Cond.	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	1	×	×	×	×	×	×	×	×
	Ph	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	1	×	×	×	×	×	×	×	×
	HLA ID	Well # 1	Well # 2	1 #	11	#	7	GPT 1-2	-	2-		2-	3-		3-	GPT 4-1	4-	GPT 4-3	1tls GPT 4-3	GPT 5-1	GPT 5-2	GPT 5-3	GPT 6-1	GPT 6-2	GPT 6-3	Decon 1	Decon 2
	JTC ID	24	7-025	7-025	-025	7-025	7-026	87-0262	7-026	7-026	7-026	7-027	7-027	7-027	7-027	7-027	27	7-0343	7-0276	7-0277	7-0278	7-0279	7-0344	7-0281	-0282	7-0283	-028

X = ANALYSIS REPORTED -- = ANALYSIS NOT REQUIRED

PARAMETERS ANALYZED FOR SURFACE WATER SAMPLES

Pest./ PCBs	1	;	1	1	1	1	1	!
Vola- tiles	1	;	1	;	1	1	1	i
Acids/ Base Neutrals	;	!	l	1	ł	ł	ł	I
cd, cr, Pb	×	×	×	×	×	×	×	×
0 & G	×	×	×	×	×	×	×	×
COD	×	×	×	×	×	×	×	×
TOX	×	×	×	×	×	×	×	×
700	×	×	×	×	×	×	×	×
Spec. Cond.	×	×	×	×	×	×	×	×
Ph	×	×	×	×	×	×	×	×
HLA ID	Site 1: N. Catfish Pond	Site 1: S. Catfish Pond	Site 1; W. Drainage Ditch	Site 1: Ditch SW of Bldg. 139	Site 2: S. Drainage Ditch	Site 3; S. Drainage Ditch	Site 4: Canal No. 1	Site 5: S. Draiange Ditch
JTC ID	87-0264	87-0267	87-0266	87-0265	87-0242	87-0340	87-0341	87-0342

X = ANALYSIS REPORTED
-- = ANALYSIS NOT REQUIRED

PARAMETERS ANALYZED FOR REQUIRED SOIL SAMPLES

JTC ID	HLA ID	Ph	Spec. Cond.	TOC	TOX	COD	0 & G	cd, Cr,Pb	Acids/ Base Neutrals	Vola- tiles	Pest./ PCBs
87-0286	Site 1: N. Catfish Pond	×	1	×	×	×	×	×	ŀ	1	!
87-0287	Site 1: S. Catfish Pond	×	ļ	×	×	×	×	×	1	1	!
87-0288	Site 1: W. Drainage Ditch	×	1	×	×	×	×	×	1	i	1
87-0289	Site 1: Ditch SW Drainage Ditch	_ ×	1	×	×	×	×	×	ŀ	1	;
87-0244	Site 2: S. Drainage Ditch	×	1	×	×	×	×	×	1	!	1
87-0392	Site 3: S. Drainage Ditch	×	1	×	×	×	×	×	1	1	1
87-0257	Site 4: Canal No. 1	×	1	×	×	×	×	×	1	!	!
87-0258	Site 5: S. Drainage Ditch	×	1	×	×	×	×	×	i	;	;
87-0246	Site 6: W. Drainage Ditch	×	1	×	×	×	×	×	ŀ	;	ļ
87-0247	Site 6: W. of South Pit	×	1	×	×	×	×	×	ŀ	1	1
87-0248	Site 6; W. of North Pit	×	1	×	×	×	×	×	l	;	1
X = ANAL	= ANALYSIS REPORTED - = ANALYSIS NOT REQUIRED	0									

PARAMETERS ANALYZED FOR OPTIONAL SOIL SAMPLES

			9					Ţ	Acids/	Veley	Doct /
JTC ID	HLA ID	Ph	Spec.	TOC	TOX	СОД	0 & G	cg, Cr, Pb	Neutrals	tiles	PCBs
87-0243	GPT 1-1	×	1	1	1	1	×	1	1	!	!
87-0245	GPT 4-3	×	1	1	:	1	ł	l t	1	1	i i
87-0231	GPT 5-1	×	ļ	×	×	×	×	;	i	! !	!
87-0232	GPT 5-2	×	<u>;</u>	×	×	×	×	1	1	t I	i I
87-0233	GPT 6-1 (2-3')	×	1	×	×	×	×	1	!	! !	!
87-0236	GPT 6-1 (4-5')	×	;	×	×	×	×	1	1	! !	}
87-0235	GPT 6-2	×	1	×	×	×	×	ł	ţ	1	-
87-0234	GPT 6-3	×	}	×	×	×	×	1	:	1	;

X = ANALYSIS REPORTED --- = ANALYSIS NOT REQUIRED

APPENDIX B QUALITY CONTROL CHARTS FOR PRECISION AND ACCURACY

JTC ENVIRONMENTAL CONSULTANTS, INC.

GENERATION AND USE OF CONTROL CHARTS

Control charts are used at JTC to set rejection criteria for control samples, to detect data trends, and to detect variation from one set of control samples to another for the same parameter, method and matrix.

Control limits are generated for each parameter and for every applicable control sample type (spike, duplicate, reference standard, laboratory control standard) used to test the precision and accuracy of the analysis.

The upper and lower control limits, or rejection criteria, are calculated as follows:

UCL = M + 3SD

LCL = M - 3SD

Where: UCL = Upper control limits

M = Mean

SD = Standard Deviation

LCL = Lower control limit

The warning limits are calculated as follows:

UWL = M + 2SD

LWL = M - 2SD

Where: UWL = Upper warning limit

LWL = Lower warning limit

The chart is then made by drawing lines representing the UCL, LCL, LWL, UWL, and the mean.

The individual data points are plotted on the chart with the sample values along the Y-axis and the control sample number, which corresponds to a specific date, along the X-axis. An out-of-control event has occurred if any data point falls above the UCL, or below the LCL; or if seven or more consecutive points fall on either side of the mean.

The chemist or technician performing the analysis evaluates all quality control points for acceptance or rejection as they are generated. If any points exceed the control limits, he/she immediately stops and notifies the Laboratory Director. If an out-of-control event is uncertain (for example, the warning limits are exceeded) the analyst immediately notifies the Laboratory Director, but continues with the analysis until otherwise instructed. When control or warning limits are exceeded, the sample lot is evaluated for possible reanalysis. Out-of-control events, and their management, are further explained in the JTC Environmental Consultants, Inc., Laboratory Quality Assurance/Quality Control Plan, Revised 2/3/87.

Once the chart has been established, subsequent results obtained on control samples are plotted as they are generated. When 15-20 data points have accumulated, the mean and standard deviation for this data set is calculated. The current mean and standard deviation are compared statistically to the cumulative or previous value using the F-test. If there is no significant difference, a new cumulative mean and standard deviation is calculated and new control limits generated. The analyst records all control data points, even when they fall outside of the control limits and reanalysis is required. Such data points are plotted on the control chart, however, these data are excluded from the data set when new control limits are calculated.

The control limits for each parameter become more representative as additional control data are calculated. The frequency with which a particular control chart is updated is dependent upon the number of samples analyzed for that parameter, the matrix, and the method combination.

SPECIFIC INFORMATION PERTAINING TO THE PROVIDED CONTROL CHARTS

Control charts for the requested parameters are enclosed. Along the X-axis of each control chart are control sample numbers 1 to 15. Each number corresponds to the date that the control samples were analyzed. A table listing all HLA control data included on the chart, the date generated, and the corresponding control sample number, is provided with each chart. For metals, acid/base-neutral and VOA analyses, the control data included on the chart is also provided on the EPA forms. On the control charts, HLA data is differentiated from control data from other cases.

As previously stated, the charts are updated once 15 control points have accumulate. During the course of this project, only the control chart for pH duplicate samples required updating. The original control chart and the updated control chart are labeled pH-lA and pH-lB respectively. The data pertaining to the updated chart is also provided.

METHOD REFERENCES

- 1. Standard Methods For The Examination of Water and Wastewater, American Public Health Association, 16th Edition, APHA, New York, New York, 1986.
- 2. Methods For Chemical Analysis of Water And Wastes, USEPA, EMSL, Cincinnati, Ohio, 1978.
- 3. Test Methods For Evaluating Solid Waste, Physical/Chemical Methods, USEPA, Waste Characterization Branch, Office of Solid Waste, April, 1984.
- 4. Experimental Statistics, U.S. Department of Commerce, National Bureau of Standards, Handbook 91, August, 1963

WET CHEMISTRY

JTC QA/QC SUMMARY FOR HARDING LAWSON ASSOCIATES

TOTAL ORGANIC CARBON

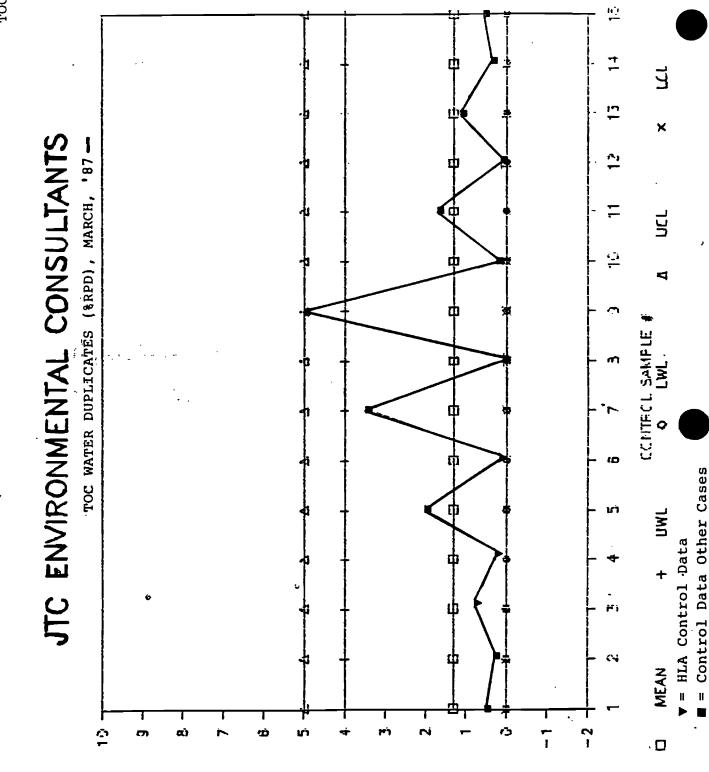
RELATIVE PERCENT DIFFERENCE FOR DUPLICATES

(Water - (ppm)

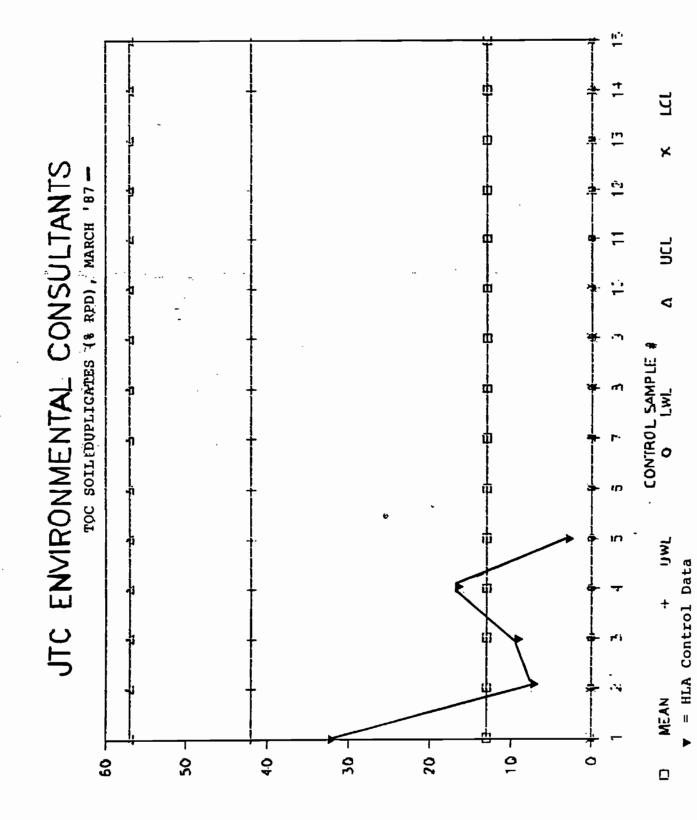
Date	Sample ID	Matrix	Sample Result	Duplicate Result	Percent RPD	Control Samp. #
4/3/87	87-0265	Water	10.12	10.05	0.7	3
4/4/87	87-0267	Water	6.28	6.26	0.3	4
4/9/87	87-0340	Water	7.98	7.98	0.0	6
		(Sc	oil - mg/kg)			
3/29/87	87-0235	Soil	9531	6846	33	1
4/4/87	87-0257	Soil	15935	14748	7.7	2
4/6/87	87-0289	Soil	3627	3312	9.0	3
4/18/87		Soil	874	1029	16.3	4
5/12/87	87-0392	Soil	3766	3905	3.62	5

EPA REFERENCE STANDARD % RECOVERY

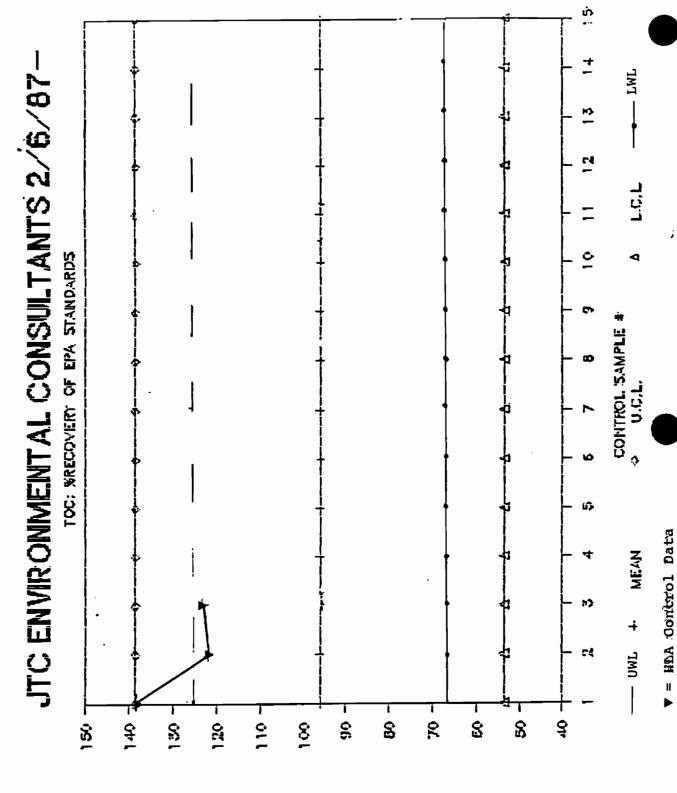
Date	EPA QC Sample ID	True Value	Found Value	Percent Recovery	Control Sampl. #
4/3/87	WP-1284 #1	4.1	5.7	139	1
4/4/87	WP-1284 #3	6.12	7.5	123	2
4/9/87	WP-1284 #3	6.12	7.5	123	3



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= Control Data Other Cases



Y RECOVERY

JTC QA/QC SUMMARY FOR HARDING LAWSON ASSOCIATES TOTAL ORGANIC HALOGEN

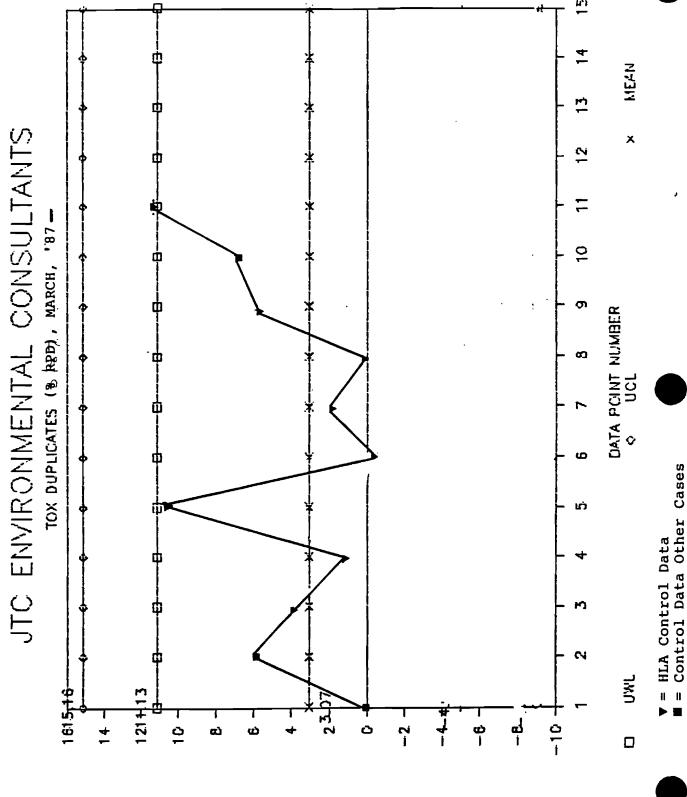
RELATIVE PERCENT DIFFERENCE FOR DUPLICATES

[Water (ppm) - Soil (mg/kg)]

Date	Sample ID	Matrix	Sample Result	Duplicate Result	Percent RPD	Control Samp. #
			a			
4/17/87	87-0232	Soil	123	118	4.1	3
4/22/87	87-0248	Soil	345	340	1.5	4
4/22/87	87-0258	Soil	· 219	197	10.6	5
4/27/87	87-0341	Water	60	60	0.0	6
4/24/87	87-0289	Soil	126	130	3.1	7
4/27/87	87-0264	Water	73	72.8	0.3	8
6/2/87	87-0392	Soil	12.5	14.0	11.3	11

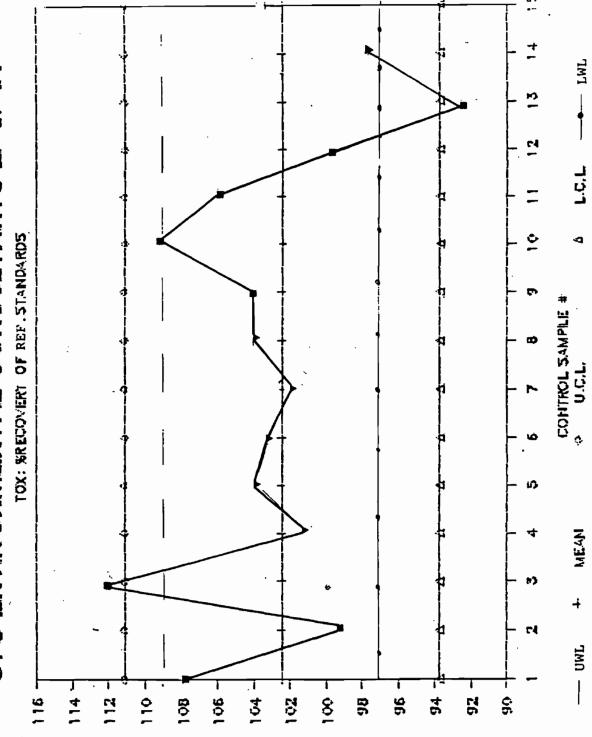
EPA REFERENCE STANDARD % RECOVERY

Date	True Value (ppm)	Found Value (ppm)	Percent Recovery	Control Sample #
4/17/87	20.0	21.16	101	4
4/22/87	20.0	20.71	104	5
4/27/87	20.0	20.63	103	6
4/24/87	20.0	20.31	102	7
4/29/87	20.0	20.78	104	8



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JTC ENVIRONMENTAL CONSULTAINTS 2/6/87-



= Control Data Other Cases

= HLA Control Data

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JTC QA/QC SUMMARY FOR HARDING LAWSON ASSOCIATES OIL AND GREASE

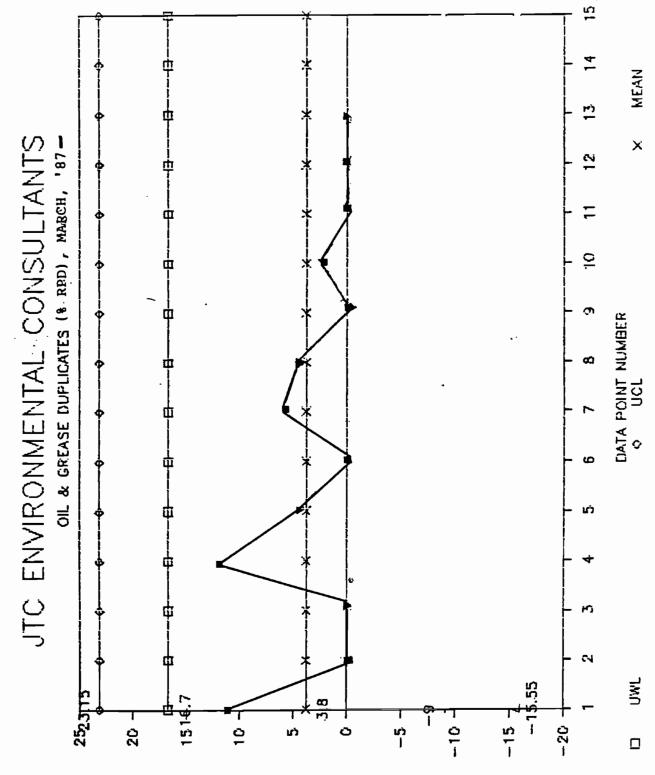
RELATIVE PERCENT DIFFERENCE FOR DUPLICATES

[Water (ppm) - Soil (mg/kg)]

Date	Sample ID	Matrix	Sample Result	Duplicate Result	Percent RPD	Control Samp. #
4/1/87	87-0231	Water	<10	<10	0.0	3
4/15/87	87-0257	Soil	226	216	4.5	5
4/28/87	87-0340	Water	2.1	2.2	4.7	8
4/28/87	87-0286	Soil	<100	<100	0.0	9
5/22/87		Soil	<100	< 100	0.0	13

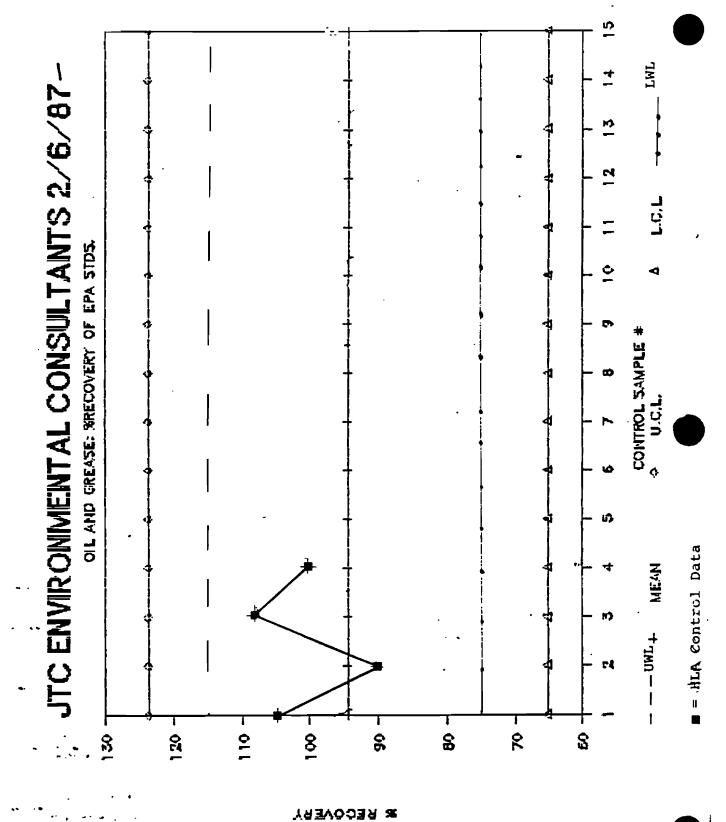
EPA REFERENCE STANDARD % RECOVERY

Date	EPA QC Sample ID	True Value	Found Value	Percent Recovery	Control Sampl. #
4/1/87	WP-379 #2	59	62	105	1
4/15/87	WP-379 #1	49.5	45	91	2
4/28/87	WP-379 #1	49.5	53	108	3
5/22/87	WP-379 #1	49.5	51	102	4



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▼ = HLA Control Data
■ = Control Data Other Cases



JTC QA/QC SUMMARY FOR HARDING LAWSON ASSOCIATES pН

RELATIVE PERCENT DIFFERENCE FOR DUPLICATES

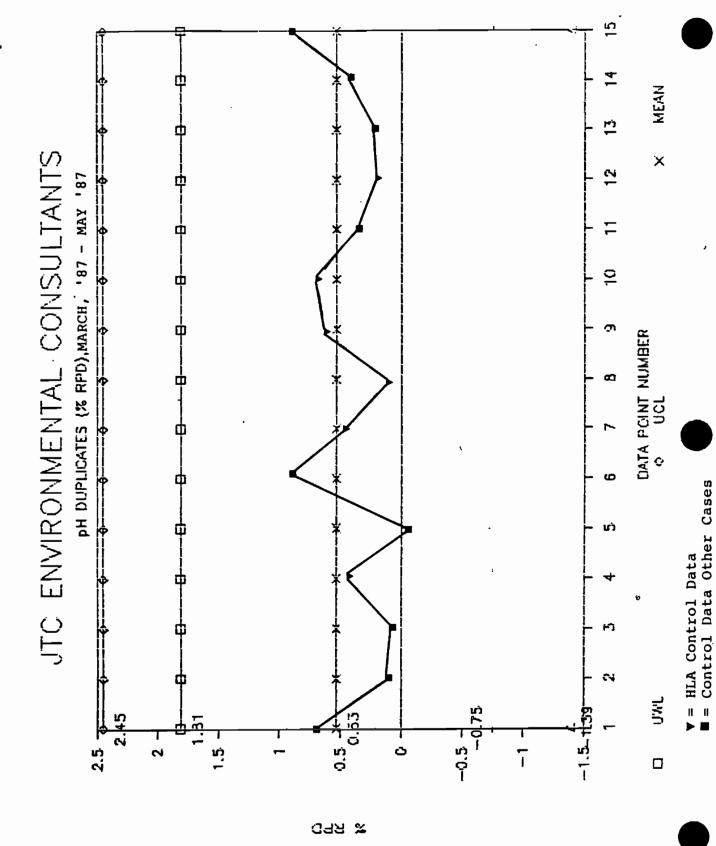
[Water (ppm) - Soil (mg/kg)]

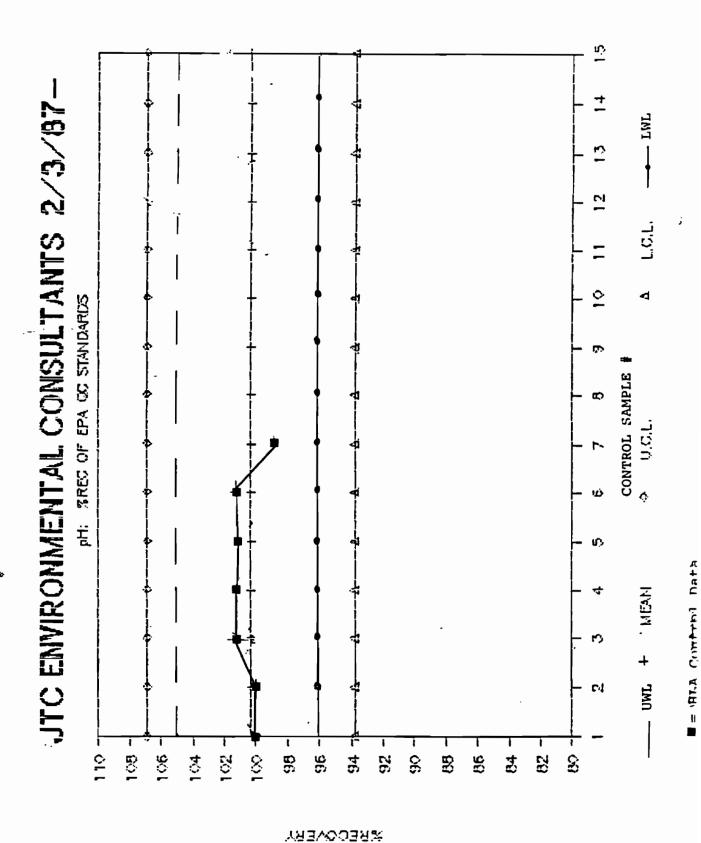
Date	Sample ID_	Matrix	Sample Result	Duplicate Result	Percent RPD	Control Samp. #
3/23/87	87-0236	Water	5.61	5.63	0.4	4A *
3/30/87	87-0248	Soil	5.75	5.70	0.9	6A
3/30/87	87-0242	Water	7.52	7.48	0.5	7A
3/31/87		Water	6.68	6.66	0.1	8A
3/31/87	87-0258	Soil	5.12	5.09	0.6	9A
4/3/87	87-0284	Water	5.89	5.85	0.7	10A
4/9/87	87-0344	Water	5.23	5.21	0.2	12A
5/7/87	87-0392	Soil	4.76	4.78	. 0.4	3B *

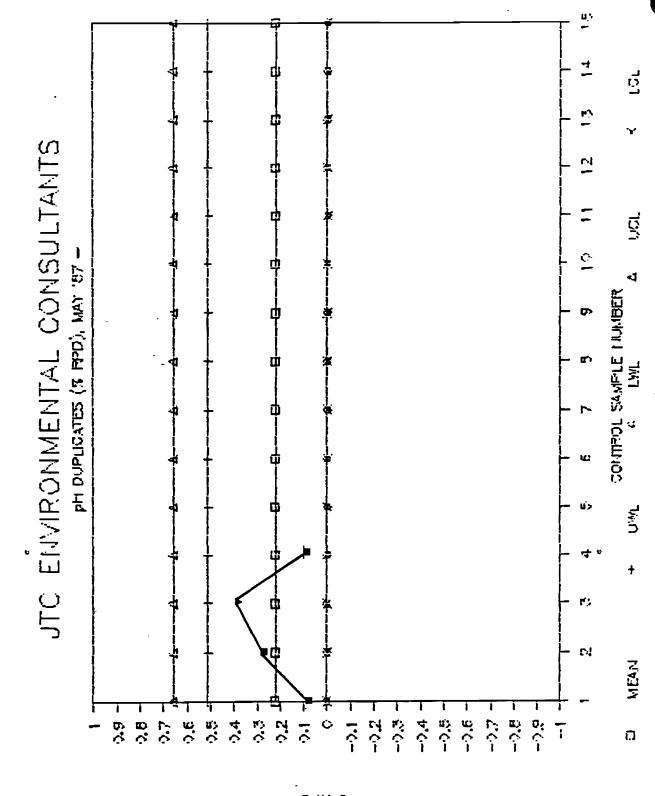
EPA REFERENCE STANDARD % RECOVERY

Date	EPA QC Sample ID	True Value	Found Value	Percent Recovery	Control Samp. #
3/23/87	WP-384 #1	5.70	5.72	100.3	1
3/30/87	WP-882 #2	7.80	7.77	99.6	2
3/31/87	WP-384 #1	5.70	5.77	101.2	3
3/31/87	WP-384 #1	5.70	5.78	101.4	4
4/3/87	WP-384 #1	5.70	5.75	100.8	5
4/9/87	WP-384 #1	5.70	5.77	101.2	6
5/7/87	WP-384 #1	5.70	5.67	99.0	7

^{* =} Refer to control chart pH-lA
** = Refer to control chart pH-lB







미국된 *각*

CONTROL CHART UPDATE

PARAMETER*: pH Duplicates

DATE OF CHART UPDATE: May, '87

UPDATE #: 1

Data Set to be Updated

 $Mean (\bar{X}_c) = .0033$

Standard Deviation (S_c) = __.0033_____

Number of Data Points (N) = 15

New Data Set

Time Period Covered: 3/16/87-4/24/87

Mean $(\overline{X}) = .42$

Standard Deviation (S) = ______

Number of Data Points (n) = ______

Updated Values

Updated Mean $(\bar{X}_t) = (N\bar{X}_c t n \bar{X})/N + n$ $\bar{X}_t = \frac{22}{\sqrt{2}}$

Updated Standard Deviation (S₊)

$$s_t^2 = [(N-1)s_c^2 + (n-1)s^2 + N\bar{x}_c^2 + n\bar{x}^2 - (N+n)\bar{x}_c^2]/N + n-1$$

 $s_t^2 = \underline{.0225}$ $s_t = \underline{.15}$

Updated Control Data

Upper Warning Limit (UWL) = .51%

Lower Warning Limit (LWL) = 0%

Upper Control Limit (UCL) = .66%

Lower Control Limit (LCL) = 0%

Computer I.D. # 206.pic

^{*}Refer to original chart for information regarding method #, matrix, analyst(s), etc.

JTC QA/QC SUMMARY FOR HADRING LAWSON ASSOCIATES CONDUCTIVITY

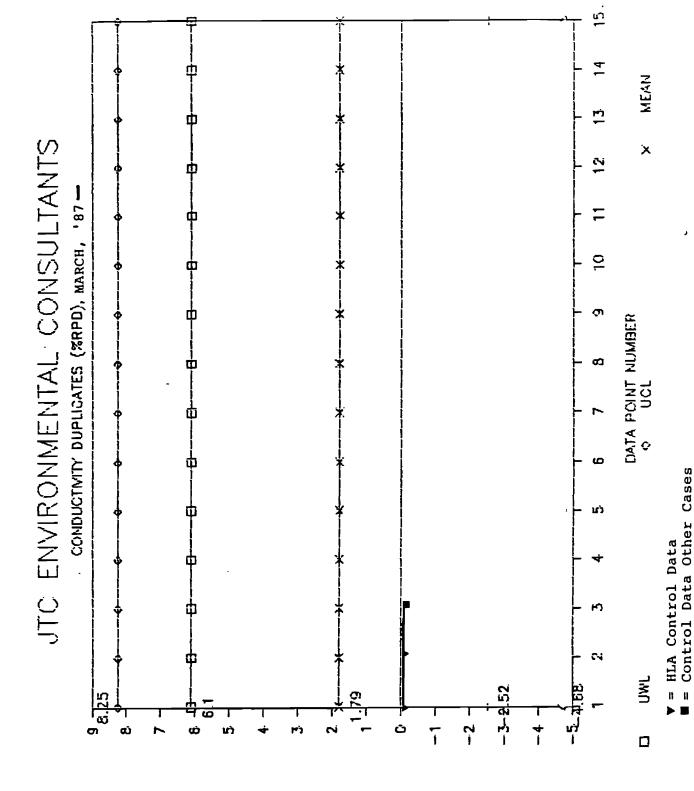
[Water (umhos)]

RELATICE PERCENT DIFFERENCE FOR DUPLICATES

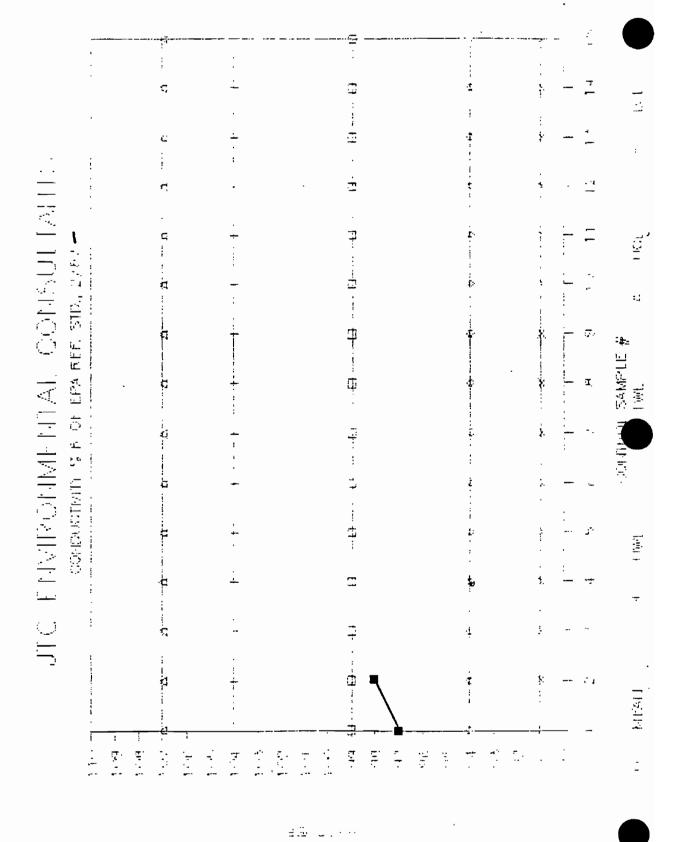
Date	Sample ID	Sample Result	Duplicate Result	Percent RPD	Control Samp. #
3/31/87	87-0242	200	200	0.0	1
4/17/87	87-0249	400	500	0.0	2

EPA REFERENCE STANDARD % RECOVERIES

Date	EPA QC Sample ID	True Value	Found Value	Percent Recovery	Control Sampl. #
3/30/87	WP-882 #2	108	105	97	1
4/17/87	WP-882 #2	108	106	98	2



೦ಆ೪ %



JTC QA/QC SUMMARY FOR HARDING LAWSON ASSOCIATES

CHEMICAL OXYGEN DEMAND

RELATIVE PERCENT DIFFERENCE FOR DUPLICATES

[Water (ppm) - Soil (mg/kg)]

	Sample		Sample	Duplicate	Percent	Control
Date	ID	Matrix_	Result	Result	RPD	Samp. #
4/3/87	87-0236	Soil	406.8	406.3	0.1	2
4/2/87		Water	20.0	17.0	16.0	3
4/2/87	87-0242	Water	40	35	13.3	4
4/9/87	87-0248	Soil	3770	3750	0.5	5
4/9/87	87-0258	Soil	1530	1650	7.5	6
4/9/87	87-0342	Water	< 5	< 5	0.0	7
4/13/87	87-0284	Water	18.9	18.9	0.0	8
4/14/87	87-0289	Soil	3530	3180	10.7	9
5/14/87	87-0392	Soil	1448	1280	12.4	10

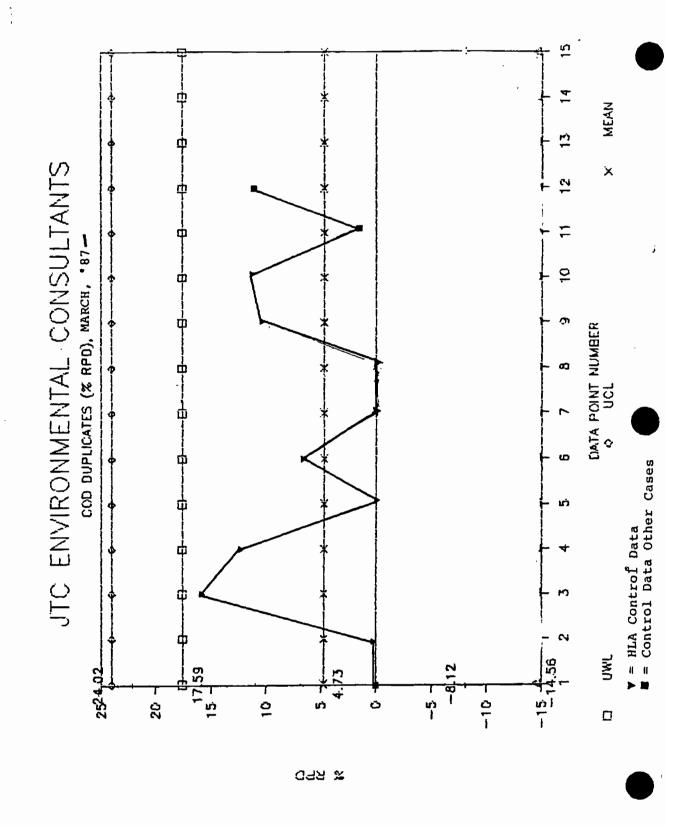
EPA REFERENCE STANDARD % RECOVERY

Date	EPA QC Sample ID	True Value	Found Value	Percent Recovery	Control Sampl. #
4/2/87	WP-1284 #3	14.9	16.5	107	1
4/9/87	WP-1284 #3	14.9	15.6	104	2
4/13/87	WP-1284 #3	14.9	14.6	98	3
4/3/87	WP-1284 #4	218	216	99	*
4/9/87	WP-1284 #3	14.9	16	107	*
4/9/87	WP-1284 #3	14.9	8.8	59	*
4/14/87	WP-1284 #4	218	217.3	99	*
5/14/87	WP-1284 #4	218	213.4	98	*

MATRIX SPIKE RECOVERY

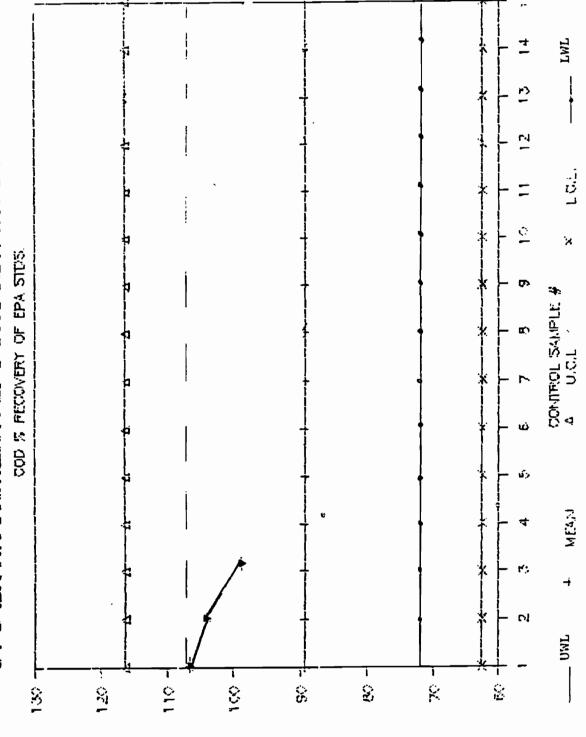
Date	Sample ID	Matrix	True Value	Found Value	Percent Recovery	Control Samp. #
4/2/87	87-0242	Water	79	78.7	100	3
4/9/87	87-0342	Water	70 77	66.6	111	4
4/23/87	87-0284	Water	77	50.0	65	5

^{* =} Not enough control data obtained using soil method to generate a chart; EPA limits used.



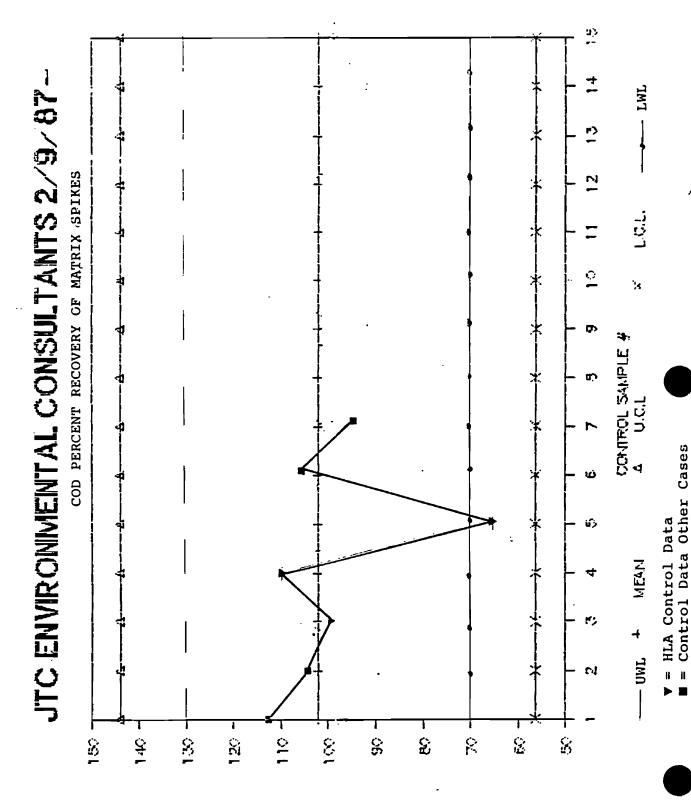
JTC ENVIRONMENTAL CONSULTAINTS 2/9/87—

7::



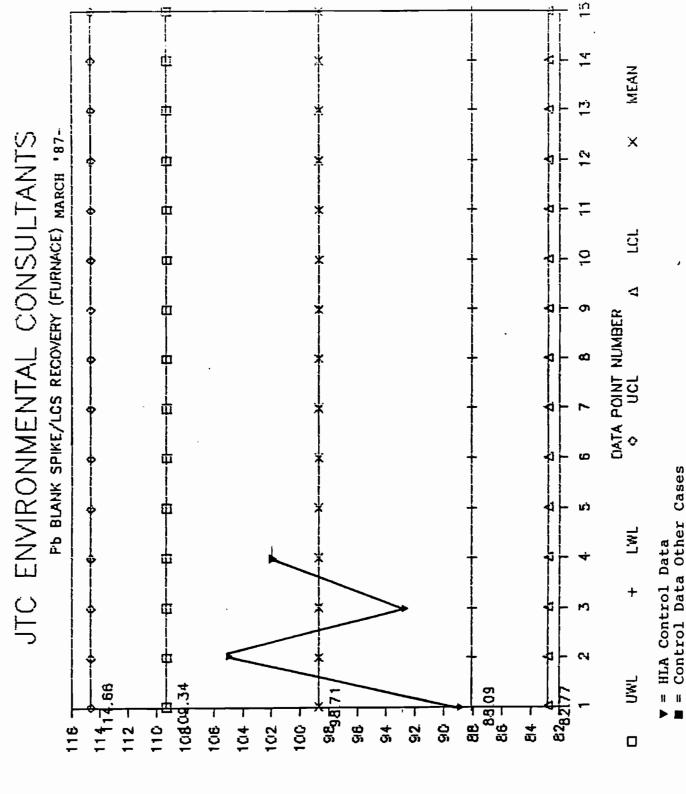
♣ BECCAEB

= HEA Control Data

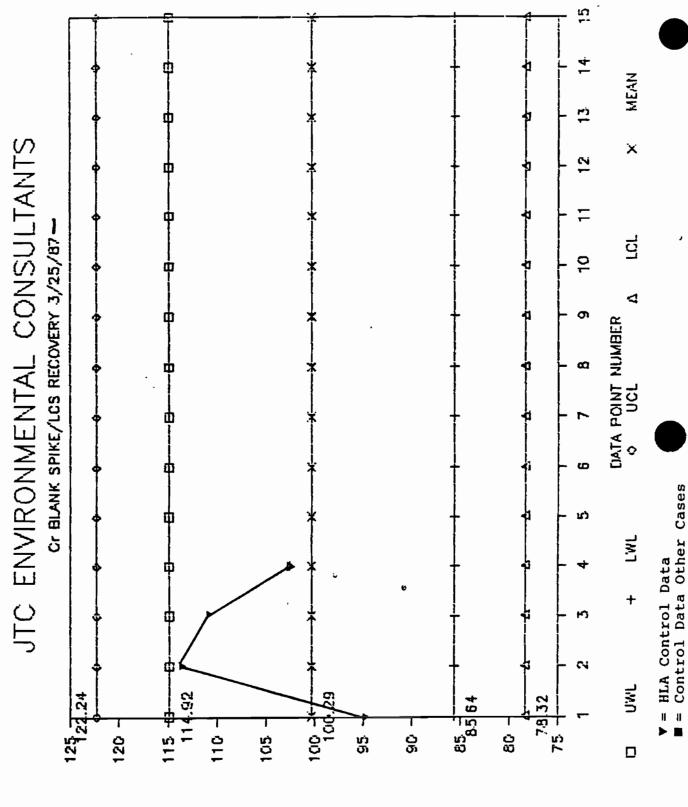


* RECOVERY

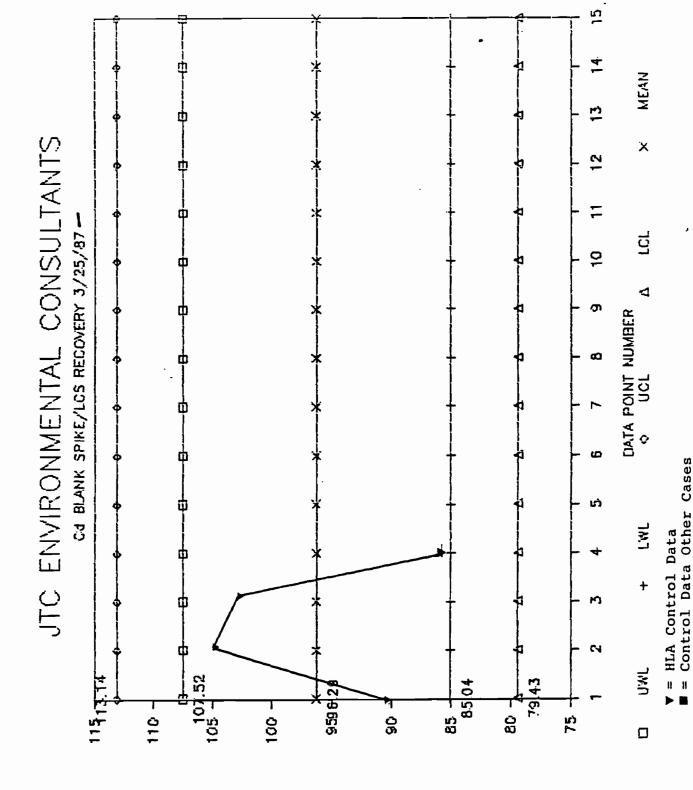
METALS (CONTROL CHARTS)



★ BECONERY



≈ RECOVERY

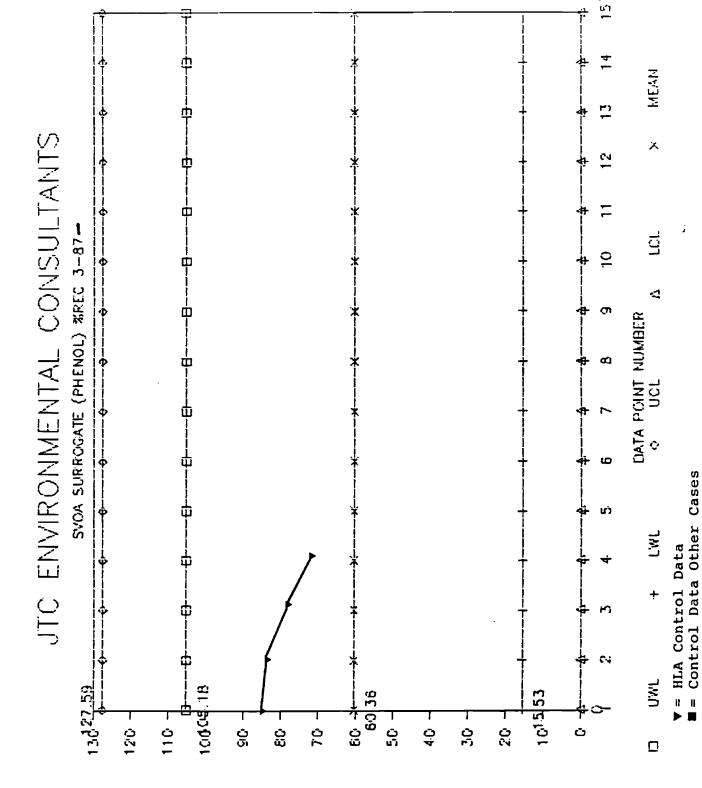


≈ RECOVERY

ACID/BASE-NEUTRALS (SEMI-VOLATILES)

(CONTROL CHARTS)

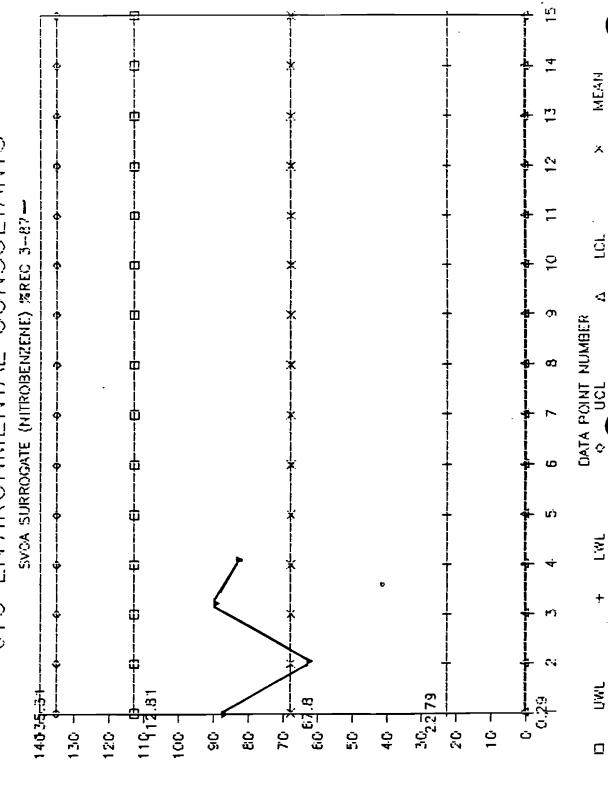




BECONESK



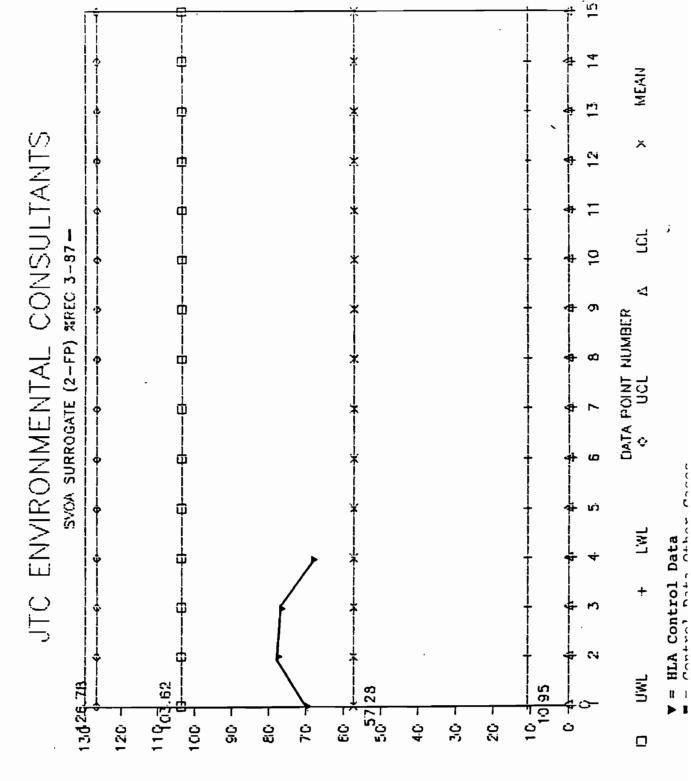




▼ = HLA Control Data ■ = Control Data Other Cases

* RECOVERY

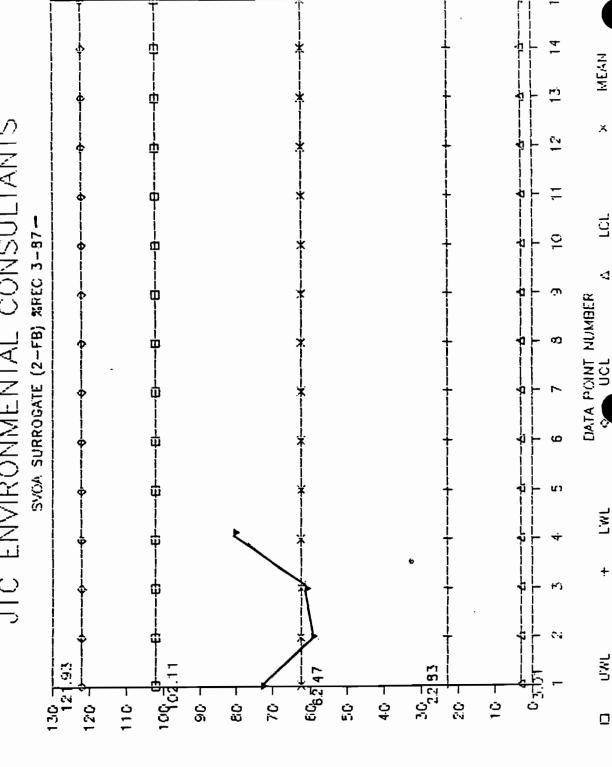




X RECOVERY



JTC ENVIRONMENTAL CONSULTANTS



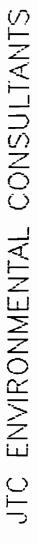
MEAN

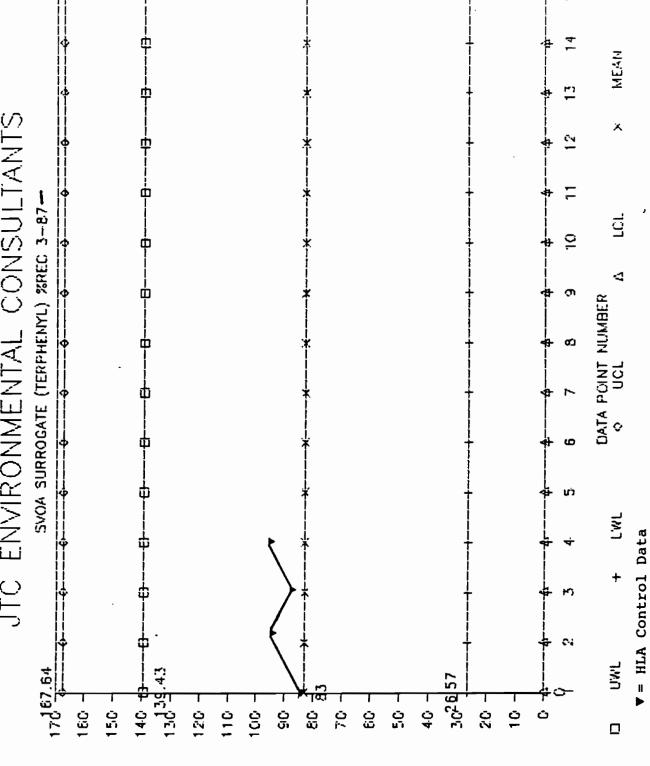
LC LC

v = HLA Control Data

RECOVERY

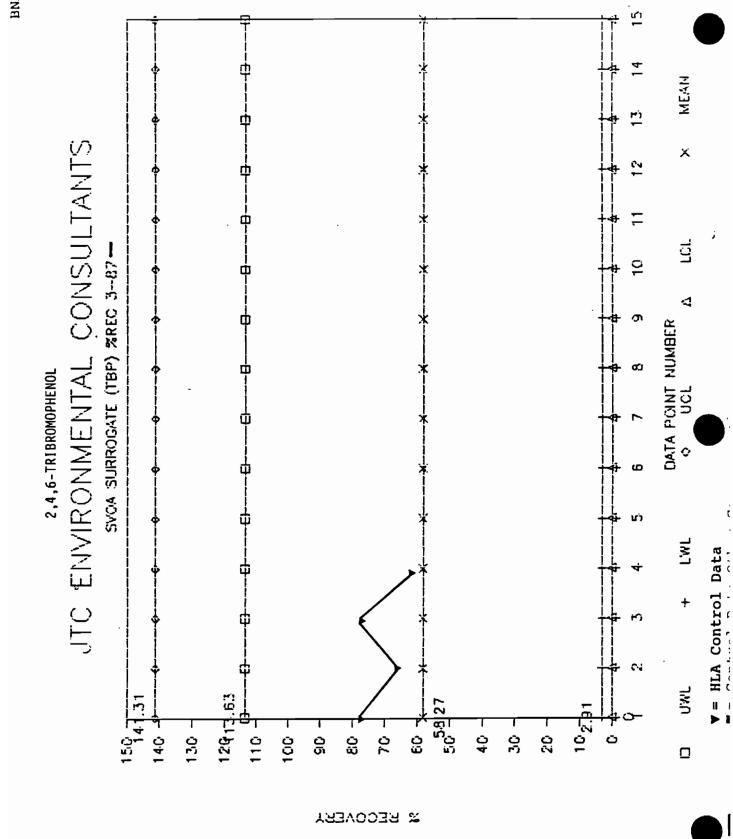






= Control Data Other Cases

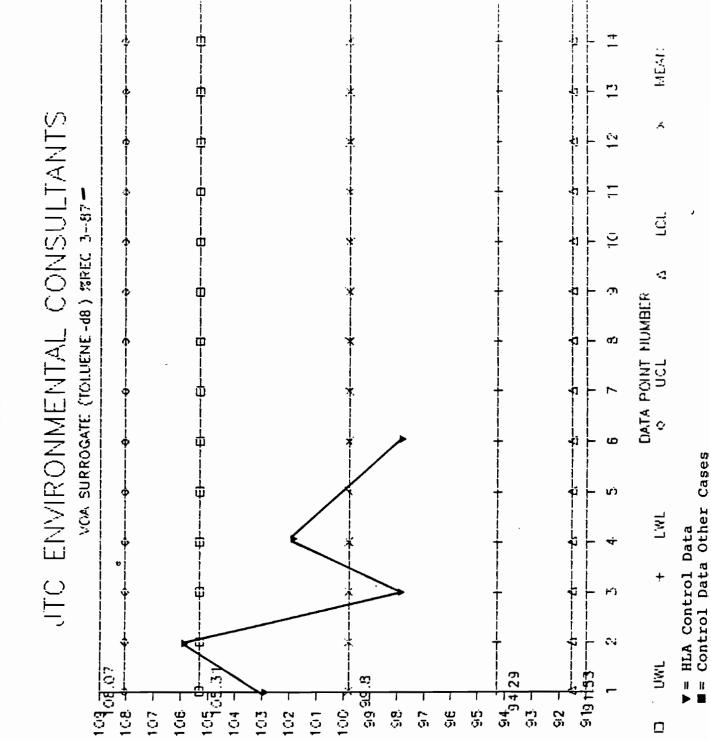
SECONESA



VOLATILE ORGANIC ACIDS (CONTROL CHARTS)

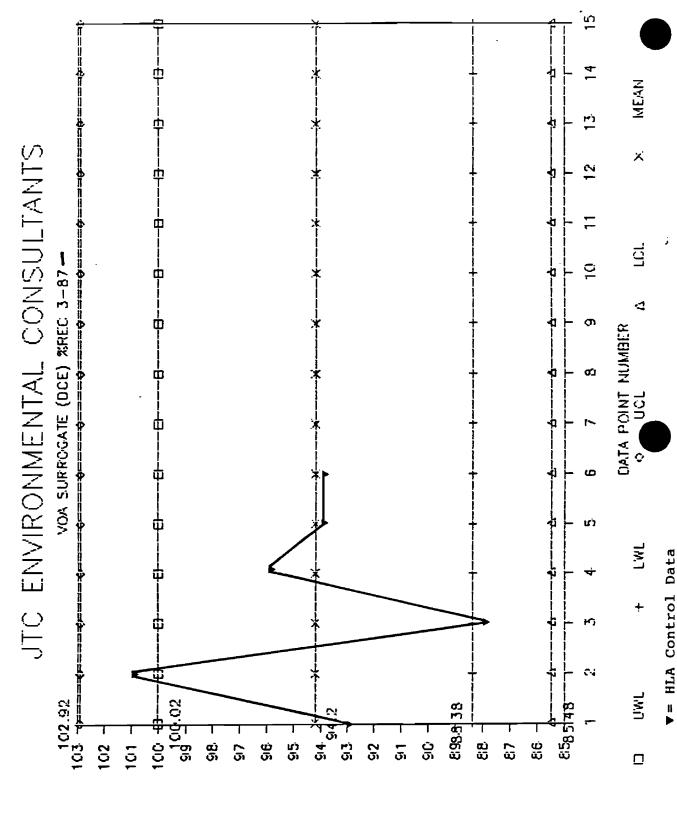


TOLUENE-d8



BECCAEBL

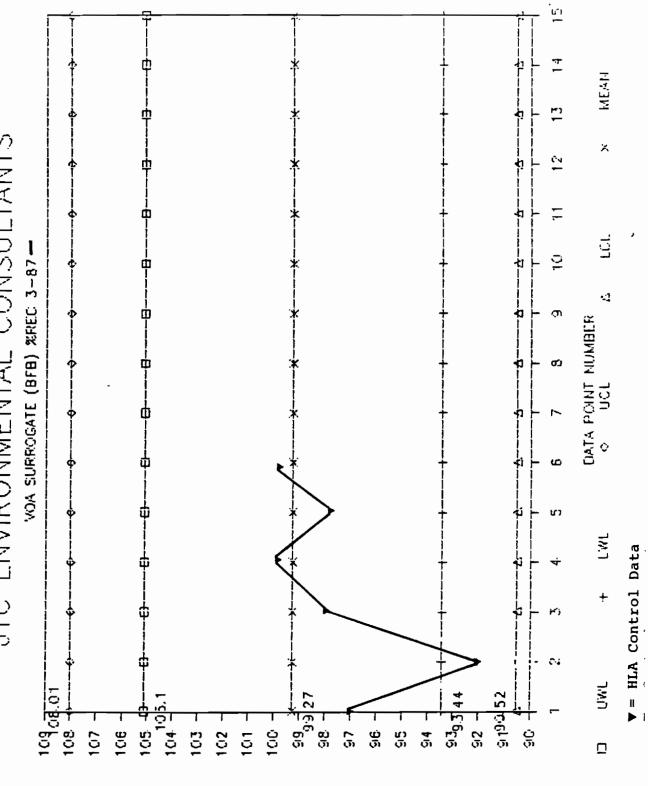
1,2-DICHLOROETHANE-d4



RECOVERY



JTC ENVIRONMENTAL CONSULTANTS



BECCAEBA

METALS

(CONTROL FORMS)

Form II

				-	OIM II					
			•	-	ort No.					
		INITIAL	L AND CO	NIUNITA	NG CALIBRATIO	ON VERIF	ICATIO	2N3		
LAB	NAME	<u> </u>			CASE	NO.	<u> </u>	} , 1-	<u>S</u>	
		22/8	7		SOW 1	NO	78			
DAT	E 410	2010	<u>/</u>		UNIT		ν			
Com	pound	Initia	al Calib	.1	Cont	inuing	Calib	ation ²		
Het	als:	True Value	Found	ZR	True Value	Found	<u>ZR</u>	Found	ZR	Method 4
1.	Aluminum									ļ
2.	Antimony									<u> </u>
3.	Arsenic									
4.	Barium						<u> </u>			,
5.	Beryllium		-			i				
6.	Cadmium	489	479	98	489	517	106	499	102	Ρ
7.	Calcium						<u> </u>			
8.	Chromium	506	508	160	SÓS	532	105	<i>5</i> 32	105	P
9.	Cobalt				-					
10.	Copper									
1.	Iron					,				<u> </u>
12.	Lead	45,8	47.2	103	45,8	47.2	103	45.5	99	IF_
13.	Magnesium									
14.	Manganese						<u> </u>			
L5.	Mercury							·		
16.	Nickel									
17.	Potassium									ļ.——
18.	Selenium									<u> </u>
19.	Silver									
20.	Sodium									
21.	Thallium									ļ
22.	Tin									<u> </u>
23.	Vanadium						<u> </u>			
24.	Zinc									
Othe	r:									
					<u> </u>					
_		1	-					1	1 1	

¹ Initial Calibration Source 2 Continuing Calibration Source
3 Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICPAPlame AA; F - Furnace

Form II B

0.	c.	Report	No.	
٧.	••	MCPOL C		

		INITIA	AND CO	ILINITA	NG CALIBRATION	N VERIF	ICATIO	Сиз	_	
LAB	name <u> </u>	TC_			CASE	NO	F _ F		<u>ک</u>	
					SOW I	_	184	<i>-</i>		
DAT	E <u>H</u>	22/85	<u>L</u>		UNITS	s	ug	11		
Com	pound	Initio	l Calib	.1	Cont	inuing	Calibi	ration ²	-	
Met	als:	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	Method 4
1.	Aluminum									
2.	Antimony								4	
3.	Arsenic				1					<u> </u>
4.	Barium					·				
5.	Beryllium									
6.	Cadmium				489	509	104			Ρ
7.	Calcium		-			•			1	
8.	Chromium				506	543	167			 P
9.	Cobalt				-					
10.	Copper									
11.	Iron					l				
12.	Lead				45.8	<u>43.4</u>	95	50,6	110	F
13.	Magnesium									
14.	Manganese		. .							
15.	Mercury					<u> </u>				
16.	Nickel	•								
17.	Potassium									<u> </u>
18.	Selenium									
19.	Silver									<u> </u>
20.	Sodium									
21.	Thallium									
22.	Tin		<u> </u>							
23.	Vanadium	i .			;			l		<u> </u>
24.	Zinc									ļ
Othe	r:									<u> </u>
Cyan	ide		-						<u> </u>	<u> </u>
1 1	nitial Cal	ibration Sou	rce		² Continu	ing Cal	ibrat	Lon Sour	ce	

³ Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICPAPlame AA; P - Furnace

Form II- a Q.C. Report No.

Initial and Continuing Calibration Verification

Lab Name: JTC Environmental Conslts. Case No. HLA #4

Date: 5/13/87 S.O.W. No. 784
Units ug/L

Continuing Calibration Initial Compound True Found %R True Found %R Found %R Method Metal: --1. Aluminum 2160 100000 Р 2. Antimony 2000 5000 3. <u>Arsenic</u> 49.1 40.9 F 4. Barium 2120 5000 Р ١ 5. Beryllium 527 1000 P 6. Cadmium 488 491 101 488 527 108 537 110 1 P 7. <u>Calcium</u> 51800 100000 Ρ 8. Chromium 529 529 100 529 563 106 564 107 | Ρ 1 9. Cobalt 496 5000 Р 1 Р : 10. Copper 524 10000 11. Iron 2060 10000 Ρ 1 5160 12. Lead 5160 4814 93 5367 104 5287 102 : 13. Magnesium 25500 Ρ 100000 14. Manganese 520 10000 P 15. Mercury 2.12 2.12 C.V ; 16. Nickel 495 5000 Ρ 17. Potassium 51300 Α ; 50000 18. Selenium 49.1 43.2 F ; 19. Silver 495 1000 P' 20. Sodium 50300 100000 Р 21. Thallium F 47.6 47.6 22. Tin 1000 5000 Р <u> '23. Vanadium</u> F, 520 10000 24. Zinc 3070 5000 F. 47.7 104 45.8 47.7 104 48.1 105 i 25. Lead 45.8 ; <u>!</u> Cyanide 100 AA

1. Initial Calibration Source: EPA QC 100

2. Continuing Calibration Source: 1/8-cal.std

3. Control Limits: Hg & Sn: 80-120% All other Compounds 90-110

4. Analytical Method: P- ICP; A-Flame; F-Furnace

Form II- b Q.C. Report No.

Initial and Continuing Calibration Verification

Lab Name: JTC Environmental Consits.

Case No. HLA #4

! AA !

Date: 5/13/87

S.O.W. No. 784 Units uo/L

	Init	tial		Cont	inuing	Cali	_			
Compound Metal:	True	Found	%R	True	Found	%R	Found	%R		Metho
1. Aluminum	2160			100000					:	Р
2. Antimony	2000			5000					;	P
3. Arsenic	49.1			40.9					1	F
4. Barium	2120			5000					:	P
5. Beryllium	527			1000					1	P
6. Cadmium	488	491	101	488	[°] 521	107	535	110	;	P
7. Calcium	51800			100000					1	P
B. Chromium	529	529	100	529	554	105	571	108	1	P
9. Cobalt	496			5000					:	P
10. Copper	524			10000					:	Р
11. Iron	2060			10000					1	P
12. Lead	5160	4814	93	5160	5365	104	5452	106	1	P
13. Magnesium	25500			100000					:	P
14. Manganese	520			10000					:	P
15. Mercury	2.12			2.12					1	c.v
16. Nickel	495			5000			·		1	P
17. Potassium	51300			50000					:	Α
18. Selenium	49.1			43.2					:	F
19. Silver	495			1000					1	Р
20. Sodium	50300			100000					:	P
21. Thallium	47.6			47.6		-			;	F
22. Tin	1000			5000					:	P
23. Vanadium	520			10000					1	P
24. Zinc	3070			5000					:	P
25. Lead	45.8			45.8	50.2	. 110	49.3	108	1	F
									:	
									1	

^{1.} Initial Calibration Source : EPA QC

100

Cyanide

^{2.} Continuing Calibration Source: 1/10 cal.std

^{3.} Control Limits: Hg & Sn: 80-120% All other Compounds 90-110

^{4.} Analytical Method: P- ICP; A-Flame; F-Furnace

Form II- a Q.C. Report No.

Initial and Continuing Calibration Verification

Lab Name: JTC Environmental Consits.

Initial

Case No. HLA #5

Date: 5/13/87

S.O.W. No. 784 Units ug/L

Continuing Calibration

								·			
Compound Metal:	True	Found	%R	True	Found	%R	Found	%R		Method	1
1. Aluminum	2160			100000					:	Р	
2. Antimony	2000			5000					:	P	
3. Arsenic	49.1			40.9					!	F	
4. Barium	2120			5000					:	P	
5. Beryllium	527			1000					1	P	
6. Cadmium	[*] 488	491	101	488	535	110	493	101	:	P	
7. Calcium	51800			100000				_	1	P	
8. Chromium	529	529	100	529	571	108	540	102	1	Р	
9. Cobalt	496			5000					ŀ	P	
10. Copper	524			10000					1	P	
11. Iron	2060			10000					ŀ	P	
12. Lead	5160	4814	93	5160	5452	106	5350	104	<u>.</u>	P	
13. Magnesium	25500			100000					ŀ	P	
14. Manganese	520			10000					:	P	
15. Mercury	2.12			2.12					1	c.v	
16. Nickel	495			5000					!	P	
17. Potassium	51300			50000					!	Α	
18. Selenium	49.1			43.2					ŀ	F	
19. Silver	495			1000					;	P	
20. Sodium	50300			100000					!	P	
21. Thallium	47.6	_		47.6					ŧ	F	
22. Tin	1000			5000				<u> </u>	<u>:</u>	P	
^{23.} Vanadium	520	_		10000					1	Р	
_24. Zinc	3070			5000					!	P	
_25. Lead	45.8	46.	3 10	1 45.B	<u>46.3</u>	יסו	47.1	103	:	F	
Lead wort:				45,8	47.7	101	<u>+</u>		;	F	<u>:</u>
		. <u> </u>		_					:		<u>:</u>
_ Cyani de	100								!	AA	

^{1.} Initial Calibration Source : EPA QC

^{2.} Continuing Calibration Source: 1/10 cal.std

^{3.} Control Limits: Hg & Sn: 80-120% All other Compounds 90-110

^{4.} Analytical Method: P- ICP; A-Flame; F-Furnace

Form II

Q. (3.	Report	No.	
------	----	--------	-----	--

INITIAL AND CONTINUING CALIBRATION VERIFICATION3

LAB NAME	<u> IC</u>	Environment	tel Cor	sult.	CASE	NO. <u>Н</u>	LA-	£2#6	•	
						NO	784			
DATE	06[02	184			UNIT	s	uall			
Compound		. Initia	1 Calib	.1	Cont	inuing	Calib	ration ²	_	
Metals:		True Value	Found	ZR	True Value	Found	ZR	Found	ZR	Method 4
1. Alum	inum									
2. Anti	mony						l			
3. Arse	nic									
4. Bari	un									
5. Bery	llium									,
6. Cadm	ium	489	515	105	1000	973	97	989	99	P
7. Calc	ium	_						_		
8. Chro	mium	506	541	107	5000	5270	105	5142	103	P
9. Coba	lt		_		-			-		
O. Copp	er				-					
1. Iron					1	, , ,				
2. Lead		45.8	45	98	49.5458	44.5 148	10%	46.8	102	P
3. Magn	esium							•		
4. Mang										
5. Merc										
6. Nick										
-	ssium	-	-				····			
	nium		-					·		
9. Silv				-						
O. Sodi										
1. Thal										
2. Tin										1
3. Vana	dium								!	
4. Zinc										
ther:				-						
_										
yanide		. •		$\neg \neg$						
	1 6-14		\(1	2 Continu	4== 0=1:		Cause	/()	1-1

³ Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

⁴ Indicate Analytical Method Used: P - ICPAFlame AA; F - Furnace

Form III

Q. C. Report No.			
BLANKS		1 1.	A1-3
	Case No.	TTI	17 1 2

Lab Name		Case No. HLA1-3
Date 4/22		Units V9
	Matrix	

Compound	Initial Calibration Blank Value	Cont 1	inuing C	Preparation Blank 1 Matrix: Matrix:			
Metals:) 				
l. Aluminum_	<u> </u>		İ				
2. Antimony:	\ \						
3. Arsenic						l	
4. Barium							
5. Beryllium_	<u> </u>	 	11 -	11.5.	1(.5	1	
6. Cadmium	4.74	4,7u	4.1U	4.74	4.74	4.74	
7. Calcium			- C			100	
8. Chromium_	7.84	7.8U	7.8U	1.8U	7.8	1.84	
9. Cobalt							
10. Copper	<u> </u>	ļ				<u> </u>	
ll. Iron						· · · · ·	
12. Lead	5u_	<u>5u</u>	54	<u>54</u>	<u>54</u>	<u>5U</u>	
13. Magnesium_	·	<u> </u>					
14. Manganese_		<u> </u>					
15. Mercury		Í					
l6. Nickel		l					
17. Potassium_							
18. Selenium							
19. Silver						1	
20. Sodium				·			
21. Thallium	· .]	
22. Vanadium							
23. Zinc		l!					
Cyanide:		ļ					
Other:							

Reporting units: aqueous, ug/L; solid, mg/kg

',

Form III

Q.C. Report No. 44

CALIBRATION BLANKS

Lab Name: JTC Environmental Consults. Case No: HLA #4

Date: 5/05/87 UNITS: ug/L

! Initial !		nuing Cal lank V	ibration alue	
Preparation: Calibration : Compund : Blank Value : Metals:	1	2 2	arue 3	4
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium				
5. Beryllium				
6. Cadmium 5u	5 u	5 u	<u>5u</u>	5u
7. Calcium				
8. Chromium 10u	10u	10u	10u	10u
9. Cobalt				
10. Copper				
11. Iron			-	
12. Lead 60uls.u	60u 18 n	60u 5u	60u/su	60u(50
13. Magnesium				
14. Manganese				
15. Mercury				
16. Molybednum				
17. Nickel				_
1B. Selenium				
19. Silicon				<u>_</u>
20. Silver				
21. Sodium				
22. Thallium				
23. Titanium				
24. Vanadium				
25. Zinc				
Sul fide				
Cyanide				

Form III

Q.C. Report No. 44

CALIBRATION BLANKS

Lab Name: JTC Environmental Consults. Case No: HLA #5

Date: 5/05/87 UNITS: ug/L

! Initial Preparation! Calibra	tion !	Cont	inuing Blank	Calibration Value	Prop Blank
Compund : Blank V. Metals:		1	2	3	4
1. Aluminum					
2. Antimony ,					
3. Arsenic					
4. Barium					
5. Beryllium			_		
6. Cadmium 5u	-	5 u	5 u		 5 u
7. Calcium					
8. Chromium 10u	-	10u	10u		10 u
9. Cobalt					
10. Copper	_				
11. Iron				-	
12. Lead 60u	<u></u>	60u S	<u> </u>	5u 5u	şa
13. Magnesium					
14. Manganese					
15. Mercury					
16. Molybednum					
17. Nickel					
18. Selenium		·			
19. Silicon					
20. Silver					
21. Sodium					
22. Thallium		_			
23. Titanium		-			
24. Vanadium					
25. Zinc					
	-				
Sul fide					

F	o	r	ш	I	1	1
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ο.	c.	Report	No.	
٦-		p		

BLANKS	١

	DLANKS		
LAB NAME	JTC Environmental Consultants.	CASE NO.	HLA -52#6
	613181	UNITS	ng/L
		<u> </u>	

Compound	Initial Calibration Blank Value	Conti	nuing C Blank 2	alibratio Value 3	<u>on</u> 4	Preparation Blank Matrix: Matrix: Soil 2
Metals:						
1. Aluminum						
2. Antimony		ļ				<u> </u>
3. Arsenic						
4. Barium						
5. Beryllium						
6. Cadmium	tu	su	5U			5u
7. Calcium						
8. Chromium	low	iou	iou			lou
9. Cobalt						
10. Copper					l 	
ll. <u>Iron</u>						
12. Lead	5u	su	su	5u	1	5u
13. Magnesium						
14. Manganese						
15. Mercury						
16. Nickel						
17. Potassium	. ,					
18. Selenium						
19. Silver						
20. Sodium						
21. Thallium						
22. Vanadium						
23. <u>Zinc</u>	<u> </u>					
Other:		-				
		 				
Cyanide	ts: aqueous, ug	/1: sol(d	ma/ka			

Reporting Units: aqueous, ug/L; solid mg/kg B - 10 64 8

Q. C. Report No	
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LAF	NAME <u>JT</u>	<u>C</u>	ICP INTERFER	ENCE CHECK	CASE NO. Check Sam	HL ple I.	A 1-	3
DAT	LAB NAME JTC CASE NO. HLA 1-3 Check Sample I.D. ICS Y S Check Sample Source Units							
Control Limits Initial Final								
Com	pound	Mean	Std. Dev.	True ²	Observed	ZR	Observed	ZR
Met	als:					<u> </u>		
ı.	Aluminum			<u> </u>	1,1-	<u>.</u>	1.	I
2.	Antimony				1		<u> </u>	
3.	Arsenic						j	
4.	Barium							
5.	Beryllium							
6.	Cadmium			964	859		1948	<u> </u>
7.	Calcium					<u> </u>		<u></u>
8.	Chromium			982	986		1048	
9.	Cobalt							<u>i</u>
10.	Copper	•						
11.	Iron			·				İ
12.	Lead							
13.	Magnesium							
14.	Manganese							
15.	Mercury							i
16.	Nickel							
17.	Potassium							
18.	Selenium	_						
19.	Silver							
20.	Sodium							
21.	Thallium							
22.	Tin							
	Vanadium							
24.	Zinc							
	r:							
							•	
1 H	ean value	based on a						

² True value of EPA ICP Interference Check Sample or contractor standard.

B - 10

Q. C. Report No.

ICP INTERFERENCE CHECK SAMPLE

LAB NAME J	τc			CASE NO.	HLA	#4	_
DATE05[13]	8 7			Check Sam	ple So	D. ICS-85 NUTCE EPA	
	Constal	Limits	1	Units 49	<u>/L</u>	Final	
Compound	Mean	Std. Dev.	True ²	Observed	ZR	Observed	ZR
Metals:				.	<u> </u>		
1. Aluminum				1,1 ~ ~	i	1 -	
2. Antimony				<u> </u>		Ļ	
3. Arsenic	<u> </u>				<u> </u>	<u> </u>	L
4. Barium	_					<u> </u>	
5. Beryllium				<u> </u>	ļ·	<u> </u>	
6. Cadmiùm	964		964	964	100	1116	1966
7. Calcium			ļ				<u> </u>
8. Chromium	485		985	1106	112	1179	119
9. Cobalt						<u> </u>	
10. Copper	-						<u> </u>
11. Iron			· .	ļļ		<u> </u>	
12. Lead	4640		4640	5343	118	6110	130.
13. Magnesium							<u> </u>
14. Manganese						 	
15. Mercury					<u> </u>	<u> </u>	<u> </u>
16. Nickel				1		 	
17. Potassium		!					<u> </u>
18. Selenium						<u> </u>	
19. Silver					-	 	<u> </u>
20. <u>Sodium</u>						 	 -
21. Thallium							
22. <u>Tin</u>						 	<u> </u>
23. Vanadium			_				
24. Zinc							
Other:						-	

Mean value based on n = 57.

True value of EPA ICP Interference Check Sample or contractor standard.

Q.	c.	Report	No.	

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ICP INTERFERENCE CHECK SAMPLE

DATE 05 - 13	CASE NO. HLA FFF Check Sample I.D. 1 C5-85 Check Sample Source EPA Units A9/L						
Compound	Control Mean	Limits l Std. Dev.	True ²	Initial Observed	zr	Final Observed	ZR
Metals:				·			
1. Aluminum			<u> </u>	×1	<u>i </u>	1:	1
2. Antimony	<u> </u>		,			<u> </u>	
3. Arsenic						<u> </u>	
4. Barium							1
5. Beryllium	n				•		
6. Cadmium			964	964	100	1116	116
7. Calcium		<u></u>		<u> </u>		<u> </u>	1
8. Chromium			985	1106	112	1179	119
9. Cobalt				1			
10. Copper	<u> </u>			1			
11. Iron	J		·				<u> </u>
12. Lead	<u> </u>		4640	5343	115	6110	130
13. Magnesium	1						
14. Manganese							
15. Mercury						}	
lo. Nickel							
17. Potassium							
l8. <u>Selenium</u>	-						<u> </u>
l9. Silver							
20. Sodium							
21. Thallium		l		<u> </u>			
22. <u>Tin</u>							
23. Vanadium							
24. Zinc							<u> </u>
other:							
	1	1	1 [1		•	1

Mean value based on n = 57.

True value of EPA ICP Interference Check Sample or contractor standard.

Q.	c.	Report	No.	
•		•		

		ICP INTERFERE	ENCE CHECK	SAMPLE		~ ~ ~ 4	- 1
LAB NAME	· —————	<u> </u>		CASE NO.	HU	7 52	<u>\</u>
DATE 66				Check Sam	ple I.	D. 106 X	- R.Z.
DATE	101			Check Sam Units	MG	arce	<u> </u>
	Control	Limitsi		Initial	-0,	Final	
Compound	Hean	Std. Dev.	True ²	Observed	ZR	Observed	ZR
Metals:			Î		Ī		
i. Aluminum				1, 1 ~ ~	<u>i i</u>	1 -	
2. Antimony	٦					<u> </u>	
3. Arsenic						<u> </u>	
4. Barium							[
5. Beryllium							
6. Cadmium	764		496	923	96	808	841
7. Calcium					<u> </u>	<u></u> i	
8. Chromium	-985		985	1085	170	1801	110
9. Cobalt							
10. Copper	•			<u> </u>			į
11. Iron			•			·	
12. Lead			<u> </u>				
13. Magnesium							
14. Manganese							
15. Mercury							
lo. Nickel							
17. Potassium							
18. Selenium	_						
19. Silver							
20. Sodium							
21. Thallium	_						
22. <u>Tin</u>							
23. Vanadium							
24. Zinc							
Other:							

Mean value based on n = _____.

True value of EPA ICP Interference Check Sample or contractor standard.

Q. C. Report No. ____

CD	TYE	CAMDI	F DE	こころひとりゃ

SPIRE SAMPLE RECOVERS							
LAB NAME JTC Environmental Chalts. CASE NO. HLA-52 H Str. Sample No. 5170 A							
DA:	re 412	9187		Lab Sample ID No. 87-024			
			Units				
			Hatrix Aque		UIL		
Cos	spound	Control Limit	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	 ZR!	
	als:	<u> </u>		1	1	1	!
1.	Aluminum	75-125			2000	1	!
2.	Antimony				500	ī	
3.	Arsenic	j -			20	1	Ì
4.	Barium	•)	2000		l
5.	Beryllium	•		•	50		
6.	Cadmium	•	40	4,74	50	180	•
7.	Calcium	·; • •	•		100,000	<u>i · · </u>	j
8.	Chromium	•	93	7.84	·200	196	
9.	Cobalt	-	l		500	<u></u> _	İ
10.	Copper	-	•		250	<u> </u>	l
11.	Iron	-			1000	<u></u>	
12.	Lead	-	11.8	5.0U	20	159	IX
13.	Magnesium	-		<u>.</u>	50,000	<u> </u>	j
14.	Manganese	•			200		
15.	Mercury	•					
16.	Nickel	-			400		
17.	Potassium	•			50,000		
18.	Selenium	-			10,		
19.	Silver	•			50	<u> </u>	
20.	Sodium	-			100,000	<u> </u>	
21.	Thallium				50	ļ	
22.	Tin	•			400	<u> ·</u>	
23.	Vanadium	•			500	<u> </u>	
24.	Zinc	-			200	<u> </u>	
oche	r:				•		
Cyan.	ide	-	ľ		100		

•		
Comments:		

 $^{^{1}}$ ZR = [(SSR - SR)/SA] \times 100

[&]quot;F"- out of control

Q. C. Report No.

SPIKE SAMPLE RECOVERY

7	C Environment	tal Cnslts.	CASE N EPA Sa Lab Sa	o. HLA- mple No.356 mple ID No.	NU M	244
	•	Hatrix Soil	Unics .	ug/_		,
Compound	Control Limit	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	 zr!	1
Hetals:	1.			N/R		Î
1. Aluminum	75-125			<u> </u>		
2. Antimony	<u> </u>			500		J
3. Arsenic	<u> </u>			40	<u></u>	1
4. Barium	-			2000		1
5. Beryllium	<u>-</u>			50	1	· ·
6. Cadmium	-	.50	4.74	50	1100]
7. Calcium				N/R	1	ĺ
8. Chromium	•	28	181	. 200	<u> 1105</u>	
9. Cobalt	-			500		İ
10. Copper	•	·		250	<u>i </u>	!
ll. Iron	-			N/R	1	
12. Lead	•	37,8	7.6	50	1601	K
13. Magnesium	•			N/R		,
14. Manganese	-			500	<u> </u>	
15. Mercury	-			1.0	<u> </u>	
16. Nickel	•			500	<u> </u>	
17. Potassium	•			N/R		
18. Selenium	-			10		
19. Silver	- ,			50		
20. Sodium	-			N/R		
21. Thallium	•			50		
22. Tim	•			500	i	
23. Vanadium	-			500		
24. Zinc	•			500		
Other:				•		
Cyanide	-			100		
			· · · ———	·		

Comments:

¹ ZR - [(SSR - SK)/SA] x 100

[&]quot;R"- out of control

Q. C. Report No. ____

SPIKE SAMPLE RECOVERY

LAB	NAME	JTC	Environmental	Cnslts.
-----	------	-----	---------------	---------

CASE NO. HLA H4
EPA Sample No. GPTI-1
Lab Sample ID No. 87-261
Units 49/L

DATE _05/13/87

Matrix Aqueous

13. Magnesium - 50,000 14. Manganese - 200 15. Mercury - 1.0 16. Nickel - 400 17. Potassium - 50,000 18. Selenium - 10, 19. Silver - 50 20. Sodium - 100,000 21. Thallium - 50 22. Tin - 400 23. Vanadium - 500			nque			
Metals: 1. Aluminum 75-125 2000 2. Antimony - 500 3. Arsenic - 20 4. Barium - 2000 5. Beryllium - 50 6. Cadmium - 52 4.7u 50 104 7. Calcium - 100,000 13,000	Compound					 ZR!
1. Aluminum 75-125 2000 2. Antimony - 500 3. Arsenic - 20 4. Barium - 2000 5. Beryllium - 50 104 7. Calcium - 52 4.74 50 104 7. Calcium - 399 136 200 137 9. Cobalt - 250 10. Copper - 250 11. Iron - 1000 13 12. Lead - 819 91 260 52 702 3 13. Magnesium - 50,000 14. Manganese - 200 15. Mercury - 1.0 16. Nickel - 400 17. Potassium - 50,000 18. Selenium - 50 19. Silver - 50 10. Sodium - 50 11. Thallium - 50 12. Tin - 400 13. Vanadium - 500			1 100020 (0011)	1		<u> ~</u>
2. Antimony - 500 3. Arsenic - 20 4. Barium - 2000 5. Beryllium - 50 6. Cadmium - 52 4.74 50 104 7. Calcium - 100,000 8. Chromium - 399 136 200 13; 9. Cobalt - 590 10. Copper - 250 11. Iron - 1000 12. Lead - 819 94 26 52 7/20 112 13. Magnesium - 50,000 14. Manganese - 200 15. Mercury - 1.0 16. Nickel - 400 17. Potassium - 50,000 18. Selenium - 50 10. Sodium - 50 10. Sodium - 50 10. Sodium - 50 11. Thallium - 50 12. Tin - 400 3. Vanadium - 500		m 75-125		1	2000	
3. Arsenic - 20 4. Barium - 2000 5. Beryllium - 50 6. Cadmium - 52 4.70 50 104 7. Calcium - 100,000 8. Chromium - 399 136 200 13; 9. Cobalt - 250 10. Copper - 250 11. Iron - 1000 12. Lead - 819 91 260 52 720 \$ 7112 13. Magnesium - 50,000 14. Manganese - 200 15. Mercury - 1.0 16. Nickel - 400 17. Potassium - 50,000 18. Selenium - 50 19. Silver - 50 20. Sodium - 100,000 21. Thallium - 50 22. Tin - 400 3. Vanadium - 500		<u> </u>			1 500	<u> </u>
4. Barium - 2000 5. Beryllium - 50 104 6. Cadmium - 52 4.7u 50 104 7. Calcium - 100,000 136 8. Chromium - 399 136 200 137 9. Cobalt - 250 100 10. Copper - 250 100 11. Iron - 1000 137 12. Lead - 819 917 260 52 59 20 3 112 13. Magnesium - 50,000 14. Manganese - 200 15. Mercury - 1.0 100 17. Potassium - 50,000 18. Selenium - 50,000 18. Selenium - 50 100,000 19. Silver - 50 100,000 19. Silver - 50 100,000 10			1	i		
5. Beryllium - 50 6. Cadmium - 52 4.7u 50 104 7. Calcium - 100,000 8. Chromium - 399 136 200 13; 9. Cobalt - 250 10. Copper - 250 11. Iron - 1000 12. Lead - 819 97 26 52 720 3 11; 13. Magnesium - 50,000 14. Manganese - 200 15. Mercury - 1.0 16. Nickel - 400 17. Potassium - 50,000 18. Selenium - 50 20. Sodium - 50 20. Sodium - 50 21. Thallium - 50 22. Tin - 400 23. Vanadium - 500		,			2000	<u> </u>
6. Cadmium - 52 4.7u 50 104 7. Calcium - 100,000 8. Chromium - 399 136 200 13; 9. Cobalt - 500 10. Copper - 250 11. Iron - 1000 12. Lead - 819 217 260 52 720 3 11; 13. Magnesium - 50,000 14. Manganese - 200 16. Nickel - 400 17. Potassium - 50,000 18. Selenium - 10, 19. Silver - 50 20. Sodium - 100,000 12. Thallium - 50 21. Thallium - 50 22. Tin - 400 23. Vanadium - 500		um -			50	
7. Calcium			52	4.74	-	104
8. Chromium - 399 136 200 13; 9. Cobalt - 500 10. Copper - 250 11. Iron - 1000 12. Lead - 819 Gir 260 52 7/20 7 11; 13. Magnesium - 50,000 14. Manganese - 200 15. Mercury - 1.0 16. Nickel - 400 17. Potassium - 50,000 18. Selenium - 10, 19. Silver - 50 20. Sodium - 100,000 21. Thallium - 50 22. Tin - 400 23. Vanadium - 500					;	 •••
9. Cobalt -			399	137		1 132
10. Copper - 250 11. Iron - 1000 13 12. Lead - 819 GT 260 52 9/20 1 112 13. Magnesium - 50,000 14. Manganese - 200 15. Mercury - 1.0 16. Nickel - 400 17. Potassium - 50,000 18. Selenium - 10, 19. Silver - 50 20. Sodium - 100,000 21. Thallium - 50 22. Tin - 400 23. Vanadium - 500 24. Vanadium - 500 25. Vanadium - 500 26. Sodium - 500 27. Tin - 500 28. Vanadium - 500 28. Vanadium - 500 29. Vanadium - 500 20. Sodium - 500 20. Sodium - 500 20. Sodium - 500 20. Vanadium - 500 20. Vanadium - 500 20. Sodium - 500 20. Sodium - 500 20. Sodium - 500 20. Sodium - 500 20. Vanadium - 500 20. Sodium - 500 21. Tin - 500 22. Tin - 500 23. Vanadium - 500 24. Tin - 500 25. Tin - 500 26. Sodium - 500 27. Tin - 500 28. Sodium - 500 29. Sodium - 500 20. Sodium		i i	0.1			1
11. Iron -		-			250	i
12. Lead - 819 GF 260 52 5920 112 13. Magnesium - 50,000 14. Manganese - 200 15. Mercury - 1.0 16. Nickel - 400 17. Potassium - 50,000 18. Selenium - 10, 19. Silver - 50 20. Sodium - 100,000 21. Thallium - 50 22. Tin - 400 33. Vanadium - 500		•			1000	1.
13. Magnesium - 50,000 14. Manganese - 200 15. Mercury - 1.0 16. Nickel - 400 17. Potassium - 50,000 18. Selenium - 10, 19. Silver - 50 20. Sodium - 100,000 21. Thallium - 50 22. Tin - 400 23. Vanadium - 500		-	819 1912	- 260 152	09/20 \$ 7	112
14. Manganese		170			i :	
15. Mercury -		·				1
16. Nickel						<u> </u>
17. Potassium - 50,000 18. Selenium - 10, 19. Silver - 50 20. Sodium - 100,000 21. Thallium - 50 22. Tin - 400 23. Vanadium - 500		-				
18. Selenium - 10, 19. Silver - 50 20. Sodium - 100,000 21. Thallium - 50 22. Tin - 400 23. Vanadium - 500		im -				
19. Silver - 50 20. Sodium - 100,000 21. Thallium - 50 22. Tin - 400 23. Vanadium - 500					10,	
20. Sodium - 100,000 100,000 21. Thallium - 50 400 22. Tin - 500 500				, 		
21. Thallium - 50 22. Tin - 400 23. Vanadium - 500		•			100,000	
22. Tin - 400 23. Vanadium - 500						
3. Vanadium - 500			-			
		•			500	
4. Zinc -	4. Zinc	-			200	
		(p)			•	NR
Syanide - 100	vanide	-			100	

 $^{1 \} ZR = [(SSR - SR)/SA] \times 100$

TRT- out of control

mments:

Form V-b

Q. C. Report No.

SPIKE SAMPLE RECOVERY

LAB NAME _ JTC Environmental Cnslts.	CASE NO. HLA HH
DATE of a loss	EPA Sample No. GP71-2
DATE _05(13/87	Lab Sample ID No. 87-262 Units 49/L

Hatrix Aqueous Spiked Sample Control Limit Sample Spiked Compound Result (SSR) Result (SR) ZR! ZR Added (SA) Metals: 2000 I. Aluminum 75-125 Antimony 500 20 3. Arsenic 2000 4. Barium 5. Beryllium 50 6. Cadmium 90 50 45 4.74 7. Calcium 100,000 92 8. Chromium 200 575 392 500 9. Cobalt 250 10. Copper 1000 11. Iron 10/90 20/500 12. Lead 762 50,000 13. Magnesium 14. Manganese 200 15. Mercury 1.0 16. Nickel 400 50,000 17. Potassium 18. Selenium 10, 19. Silver 50 20. Sodium 100,000 21. Thallium 50 400 22. Tin 500 23. Vanadium 200 24. Zinc Other: LEAD(P) NR 100 Cyanide

Comments:

 $^{^{1}}$ ZR = [(SSR - SR)/SA] x 100

[&]quot;R"- out of control

Q. C. Report No.

SPIKE SAMPLE RECOVERY

LAB	NAME	JTC	Environmental	Cnslts	5.	CASE NO.	HLA #4
						EPA Sample	
DATE	05	113187				Lab Sample	ID No. 87-286
						Units 49	11
			•		Cail		

		Spiked Sample		Spiked	
Compound	ZR	Result (SSR)	Result (SR)	Added (SA)	ZR!
Metals:				N/R	١ /
i. Aluminum	75-125				
2. Antimony	•			50 0	
3. Arsenic	-			40	
4. Barium	-			2000	
5. Beryllium	-			50	
6. Cadmium	-	57	4.74	50	114
7. Calcium	·· ,			N/R	سنإ
8. Chromium		247	11	. 200	113
9. Cobalt	-			500	
10. Copper	- 1			250	<u>.</u>
ll. Iron				N/R	<u> </u>
12. Lead	•	5917	60U	500	119
3. Magnesium	-			N/R	
4. Manganese	-	1		500	
5. Mercury	-		1	1.0	
6. Nickel	-			500	
7. Potassium	-			N/R	
8. Selenium	-			10	
9. Silver	-			50	
0. Sodium	-			N/R	
1. Thallium				50	
2. Tin	-			500	
3. Vanadium	•			500	
4. Zinc	-			500	
her: LEAO		60.6	5u	.5° ·	12
		0010			
anide			1	100	

Comments:

[&]quot;R"- out of control

Q. C. Keport No.

SPIKE SAMPLE RECOVERY

LAB NAME _ JTC Environmental Cnslts.	CASE NO. HLA#5
	EPA Sample No. C.+ 3 SMD
DATE 5-13-87	EPA Sample No. C.+e 3 SMD Lab Sample ID No. 87-340
	Units 4.

Hatrix Soft HOH Control Limit | Spiked Sample Spiked Sample Compound Result (SSK) Result (SR) Added (SA) | IR! Metals: N/R 1. Aluminum 75-125 500 2. Antimony 40 3. Arsenic 4. Barium 2000 5. Beryllium 50 6. Cadmium 4.74 104 5 Z 50 N/R 7. Calcium 200 8. Chromium 7.8u 206 103 9. Cobalt 500 10. Copper 250 11. Iron N/R 500/20 12. Lead 13. Magnesium N/R 500 14. Manganese 1.0 15. Mercury 500 16. Nickel N/R 17. Potassium 18. Selenium 10 19. Silver 50 20. Sodium 50 21. Thallium 500 22. Tin 500 23. Vanadium 24. Zinc 500 . . Other:___ 100 Cyanide

_			
Comments:			

 $^{^{1}}$ ZR - [(SSR - SR)/SA] x 100

[&]quot;R"- out of control

Q.	c.	Keport	No.	

SPIKE SAMPLE RECOVERY

LAB NAME	JTC Environmental	Cnslts	s.	CASE NO.	HLA - 52 # 6
				EPA Sample	No. Sur 3
DATE (x 102 87			Lab Sample	ID No. 87-0392
				Units	49/L
	H	atrix _	Soil	_	

Compound	Control Limit	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR
Hetals:	 		 		i
I. Aluminum	75~125	·	3	N/R	!
2. Antimony	-			50	<u> </u>
3. Arsenic	i -			40	i -
4. Barium	-			2000	
5. Beryllium	-			50	1
6. Cadmium	•	49	4.74	50	98
7. Calcium				N/R	•
B. Chromium	•	242	8.0	· 200	117
G. Cobalt	•			500	!
O. Copper	-	:		250 ·	
1. Iron	•			N/R	
2. Lead	•	99	14.6	50	168
3. Magnesium	•			N/R	
4. Manganese	•			500	
5. Mercury	•			.4	_
6. Nickel	•			500	
7. Potassium	•			N/R	
8. Selenium j	-			10	
9. Silver	-			50	
). Sodium	•			N/R	
. Thallium	-			50	
. Tin	•			500	
. Vanadium	-			500	
. Zinc	-			500	
her:				•	
anide				100	

¹ ZR - [(SSR - SK)/SA] x 100

"R"- out of control

Comments:

Q. C. Report No. _

DUPLICATES

LAB NAME JTC Environmental Cnslts.

CASE NO. HLA-EPA Sample No. C Lab Sample ID No. Units 119

Aqueous

				<u> </u>	x Aqu	eous		0 1	<u> </u>
Compound			Contro	l Limit	Samp	le(S)	Duplic	ate(D)	RPD ²
Het	als:	± C	RDL	% RPD	_				
1.	Aluminum	<u> </u>	200	20	1				
2.	Antimony	±	60	20					•
3.	Arsenic	±	10	20				_	
4.	Barium	<u>+</u>	200	20			_		· ·
5.	Beryllium	±	5_	20					
6.	Cadmium	±	5	20	·4,	<u>7U</u>	4,	<u> 7U </u>	NC_
7.	Calcium	±5	,000	20					
8.	Chromium	±	10	20	7	8U	7	8U	NC
9.	Cobalt	±	50	20					
10.	Copper	±	25	20					·
11.	Iron	<u>+</u>	100	20					
12.	Lead	±	_5	•20	5.1) u	5,	<u>0u</u>	NC
13.	Magnesium	±5	,000	20					
14.	Manganese	±	15	20					
15.	Mercury	±	0.2	20					
16.	Nickel	<u>±</u>	40	20					
17.	Potassium	<u>±5</u>	,000	20	-				
18.	Selenium	+	5	20					
19.	Silver	±	_10	20					
20.	Sodium	±5	,000	20					
21.	Thallium	±	_10	20					
22.	Tin	±	40	20					
23.	Vanadium	±	50	20					
24.	Zinc		20	20					
Othe	r:								
			<u> </u>						
Cyan	ide	<u> </u>	10	20					

[&]quot; Out of Control

¹ To be added at a later date.

² RPD = $\{\{S + D\}/((S + D)/2)\}$ + 100

Q. C. Report No.

DUPLICATES

LAB NAME JTC Environmental Consists.

DATE 42984

CASE NO. HLA-52#.

EPA Sample No. # 3 South

Lab Sample ID No. 87-0244

Matrix Soil

Compound Metals:	± CRDL	l Limit	Sample(S)	Duplicate(D)	RPD ²
	± CRDL	_			
1 41		% RPD			
1. Aluminum	±	20			
2. Antimony	± 0 9	20			
3. Arsenic	±	20			<u> </u>
4. Barium	±	20			•
5. Beryllium	±	20			
6. Cadmium	4 31	20	29u	2.9 U	<u>NC</u>
7. Calcium		20	29U		
8. Chromium	± 6,2	20	14,91	4,84	NC
9. Cobalt	+	20)		
10. Copper	<u> </u>	20			
11. Iron	+	20			
12. Lead	± 3.1) · 20	4,7	3,7	24
13. Magnesium	<u>±</u>	20			
14. Manganese	<u> </u>	20			
15. Mercury	<u>.</u>	20			
16. Nickel	±	20			-
17. Potassium	±	20			
18. Selenium	<u>+</u>	20			
19. Silver	±	20			;
20. Sodium	± . !	20			
21. Thallium	<u>+</u> ;	20			
22. <u>Tin</u>	± !	20			
23. Vanadium	<u>*</u>	20			
24. Zinc	<u>+</u> 1	20			
Other:					
				•	
yanide	<u>±</u>	± 20			

^{*} Out of Control

¹ To be added at a later date.

 $[\]frac{2}{100} = \frac{1}{100} = \frac{1}$

Form VI -a

Q. C. Report No.

DUPLICATES

LAB NAME _JTC Environmental	Cnslts.	CASE NO. HLA HH	
DATE 05/13/87		EPA Sample No. <u>87-26</u>	_
	Aguanus	Unics 49/L	

		Matr:	ix Aqueous		
Cor	apound	Control Limit	Sample(S)	Duplicate(D)	RPD ²
Met	als: Aluminum			· · · · · · · · · · · · · · · · · · ·	
2.	Antimony				
3.	Arsenic			10	
4.	Barium				· ,
5.	Beryllium				
6.	Cadmium	± 5	_ 4.7 น	4.7u	NC
7.	Calcium				
8.	Chromium	± 20%	136	165	19
9.	Cobalt				·
10.	Copper			·	
11.	Iron	•			
12.	Lead	± 20 ·	260 /52	182 /61	10/17
13.	Magnesium				'
14.	Manganese				
15.	Mercury				
16.	Nickel	·			
17.	Potassium				
18.	Selenium				
19.	Silver	_			
20.	Sodium				
21.	Thallium				
22.	Tin				
23.	Venadium			-	
24.	Zinc				
Othe	r:				
				4	
Cyan	ide				1

^{*} Out of Control

I To be added at a later date.

 $^{^{2}}$ RPD = [|S - D|/((S + D)/2)] x 100

Form VI -b

Q. C. Report No. _

DUPLICATES

LAB	NAME	<u>JTC</u>	Environmental	Cnslts.
-----	------	------------	---------------	---------

CASE NO. HIA #4

EPA Sample No. GPT1-2

Lab Sample ID No. 87-0262

Units 44/L

DATE 05/13/87

				Macr	1x Aqueous		
Co	pound	1	Control	L Limit L	Sample(S)	Duplicate(D)	RPD ²
He	cals:	± C	RDL	% RPD			
1.	Aluminum	<u>+</u>	200	20			
2.	Antimony .	±	60	20			· ·
3.	Arsenic	±	10	20			
4.	Barium	±	200	20			
5.	Beryllium	±	5	20			
6.	Cadmium	±	[5]	20	- 4,7W	4.7u	NC.
7.	Calcium	±5	,000	20		<u>.</u>	
8.	Chromium	±	10 i	201	392	415	5.7
9.	Cobalt	±	50	20			
10.	Copper	±	25	20			
.11.	Iron	±	100	20			
12.	Lead	±	5	[20]	310 /79	211 /70	38 *
13.	Magnesium	±5	,000	20			1
14.	Manganese	±	15	20			
15.	Mercury	±	0.2	20			
16.	Nickel	±	40	20			•
17.	Potassium	<u>±5</u>	,000	20			
18.	Selenium	<u>+</u>	5	20			
19.	Silver	±	10 ·	20			
20.	Sodium	±5	,000	20			
21.	Thallium	±	10	20			
22.	Tin	±	40	20			
23.	Vanadium	±	501	20			
24.	Zinc	±	20	20			
Othe	r:						
Cyan	1de	±	10	. 20			

^{*} Out of Control

٠:

¹ To be added at a later date.

 $^{^{2}}$ RPD = [|S - D|/((S + D)/2)] x 100

Form VI

Q. C. Report No.

DUPLICATES

LAB	NAME	JTC	Environmental	Cnslts.
-----	------	-----	---------------	---------

CASE NO. HLR #4

EP# Sample No. 199

Lab Sample ID No. 87-286

DATE 05/13/87

Units malka

Matrix	Soil

			Hatri	x Soil	<u> </u>	
Con	ipound	Control	l Limit l	Sample(S)	Duplicate(D)	RPD ²
Met	als: Aluminum	± CRDL	% RPD 20			
2.	Antimony	±	20			
3.	Arsenic	<u>t</u>	20			
4.	Barium	±	20			
5.	Beryllium	<u>±</u>	20			
6.	Cadmium	± [3.3]	20	3.1u	3.1u	NC
7.	Calcium	<u>+</u>	20			
8.	Chromium	± 16.67 !	20	7.2	6.6	8.8
9.	Cobalt	<u>+</u>	20			
10.	Copper	±	20_			
11.	Irou	<u>+</u>	20			
17.	Lead (F)	± [3.3]	. 20	3.3 u	3·3u	NC
13.	Magnesium	±	20			
14.	Manganese	<u>+</u>	20			
15.	Mercury	<u>+</u> . !	20			
16.	Nickel	± 1	20			<u>-</u>
17.	Potassium	<u> </u>	20			
18.	Selenium	_±	20		1	
19.	Silver	<u> </u>	20	·		
20.	Sodium	<u> </u>	20			
21.	Thallium	+ .	20		_	
22.	Tin	<u> </u>	20			
23.	Vanadium	<u> </u>	20			
24.	Zinc	+ 1	20			
Othe	r:	<u> </u>				
Cyan	ide	<u> </u>	± 20			

^{*} Out of Control

· :

¹ To be added at a later date.

 $^{^{2}}$ RPD = [[S - D]/((S + D)/2)] x 100

Form VI

Q. C. Report No. ___

DUPLICATES

LAB NAME <u>JTC Environmental</u> Cnslts.

CASE NO. #LA #5
EPA Sample No. Site > SOch

DATE 5-13-87

Lab Sample ID No. 87.340
Units 49/

Matrix Aqueous

				Matri	x Aqueous		
Cot	apound	1	Control	Limit	Sample(S)	Duplicate(D)	RPD ²
He	tals:	± C	RDL	% RPD			-
1.	Aluminum	<u>+</u>	200 -	20			
2.	Antimony	±	60	20			
3.	Arsenic	±	10	20			
4.	Barium	±	200	20			•
5.	Beryllium	±	5	20			
6.	Cadmium	±	5	20	4.7u	4.74	NC
7.	Calcium	±5	,000	20		•	
8.	Chromium	±	10	20	7.84	7.8 u	Νζ
9.	Cobalt	±	50	20			
10.	Copper	±	25	20			
-11.	Iron	±	100	20		_	
12.	Lead	<u>±</u>		•20	604/5U	63/5u	~\/Nc
13.	Magnesium	±5	,000	20			
14.	Manganese	<u>+</u>	15	20			
15.	Mercury	<u>±</u>	0.2	20			
16.	Nickel	±	40	20			
17.	Potassium	<u>±5</u>	,000	20			
18.	Selenium	<u> </u>	5	20			
19.	Silver	±	10	20			
20.	Sodium	±5	,000	20			 -
21.	Thallium	±	10	20			
22.	Tin	±	40	20			
23.	Vanadium	±	50	20			
24.	Zinc	±	20	20			
Othe	:r:						
Cyan	iide .	±	10	. 20			

^{*} Out of Control

. :

¹ To be added at a later date.

 $^{^{2}}$ RPD = {|S - D|/((S + D)/2)} x 100

Form VI

Q. C. Report No.

DUPLICATES

LAB	NAME	JTC	Environmental	Cnslts.

DATE 06/02/87

CASE NO. HLA - 12 # 6.

EPA Sample No. Suit 3
Lab Sample ID No. 87-0392 Unics mal

		109					
Co	mpound	Control Limit		Sample(S)	Duplicate(D)	RPD ²	
He	tals: Aluminum	± CRDL	% RPD 20				
2.	Antimony	±	20	7			
3.	Arsenic	<u>±</u>	20				
4.	Barium	±	20				
5.	Beryllium	±	20				
6.	Cadmium	± 2.9	20	2.9u	2.9u	NC	
7.	Calcium	±	20				
8.	Chromium	± 4.8	! 20	5.0	6.2	ZZ NIR	
9.	Cobalt	±	. 20				
10.	Copper	±	20				
11.	Iron	±	20				
12.	Lead	± 3.1	. 20	6.8 5	US	49	
13.	Magnesium	±	20				
14.	Manganese	±	20				
	Mercury	<u> </u>	20				
16.	Nickel Nickel	<u>±</u>	20			-	
	Potassium	<u> </u>	20				
	Selenium	<u>+</u>	. 20				
19.	Silver	<u>±</u>	20	·			
20.	Sodium	<u> </u>	20				
	Thallium	<u> </u>	20				
22.	Tin	± .	20				
	Vanadium	<u> </u>	20				
24. Othe	Zinc :r:	<u>+ !</u>	20				
Cyan	ilde	±	± 20				

^{*} Out of Control

¹ To be added at a later date.

 $^{^{2}}$ RPD = [|S - D|/((S + D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

Porm VII

Q.C. Report No.

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME JTC Environmental Cons.	CASE NO. HLA-52#
DATE 429.87	LCS UNITS ug/L mg/kg
., .,	(Circle One)

		Required Detection	Instrumen	t Detection		•	Ī
Compound		Limits (CRDL)-ug/1 Limits (IDL)-ug/1				ntrol Sau	ple
	_		ICP/AA	Furnace	True	Found	ZR
Met	als:	9	a	,			
1.	Aluminum	200			10000		
2.	Antimony	60			1000		
3.	Arsenic	10	<u> </u>	٠.٠	50		<u> </u>
4.	Barium	200	<u> </u>		1000		
5.	Beryllium	5			400		
6.	Cadmium	5	4,7	1	400	363	911
7.	Calcium	5000			20000		
8.	Chromium	. 10	7.8		1000	951	95
9.	Cobalt	50			1000		
10.	Copper	25			2000		
11.	Iron	100	,		3000		
12.	Lead	5		2.0	50	44.3	89
13.	Magnesium	5000			10000		
14.	Manganese	15			3000	ŕ	
15.	Mercury	0.2			2.12		
16.	Nickel	40			1000		
17.	Potassium	5000			10000		
18.	Selenium	5			50		
19.	Silver	10	•		400		
20.	Sodium	5000			50000		
21.	Thallium	10		<u> </u>	50		
22.	Tin ·	40			1000		
23.	Vanadium	50			2000	·	
24.	Zinc	20			1000		
Othe	r:						
					L		
Cyan	1de	10			100		<u></u> ;

Q.C. Report No.

Instrument Detection Limits and Laboratory Control Sample

Lab Name: JTC Environmental Consits, Inc. Case No. HLA #4

Date: 5/13/87 LCS Units ug/L

Compound	Required Detection Limits - ug/L		ment Dete ts – ug/L		Lab Cont Sample	
i ! !		ICP/AA	Furnace	True	Found	%R
1. Aluminum	200	140		10000		
2. Antimony	60	57		1000		
3. Arsenic	10	100	5.4	50		
4. Barium	200	18		1000		
5. Beryllium	5	4.9		400		
6. Cadmium	5	4.7		400	413	103
7. Calcium	5000	950		20000		_
8. Chromium	10	7.8		1000	1110	111
9. Cobalt	50	20		1000		
10. Copper	25	14		2000		
11. Iron	100	37		3000		
12. Lead	5	60	2	1000	1010	101
13. Magnesium	5000	470		10000		
14. Manganese	15	10		2000		
15. Mercury	0.2	0.16		2.12	_	
16. Nickel	40	25		1000		
17. Potassium	5000	1530		10000	<u> </u>	
18. Selenium	5	114	4.4	50		
19. Silver	10	7.1		400		
20. Sodium	5000	4510		50000		
21. Thallium	10		3	50		
22. Tin	40	36		1000		_
23. Vanadium	50	21		2000		_
24. Zinc	20	19		1000		
25. Lead(F)	5		2.0	50	46.5	93
<u> </u>	10	N/R				

Form VII

Q.C. Report No.

Instrument Detection Limits and Laboratory Control Sample

Lab Name: JTC Environmental Conslts, Inc.

Case No. HLA #5

Date: 5/13/87

LCS Units ug/L

Compound :	Required Detection Limits - ug/L		ment Dete ts - ug/L	Lab Control Sample		
 		ICP/AA	Furnace	True	Found	%R
1. Aluminum	200	140		10000		
2. Antimony	60	57		1000		
3. Arsenic	10	100	5.4	50		
4. Barium	200	18		1000		
5. Beryllium	5	4.9		400		
6. Cadmium	5	4.7		400	421 :	105
7. Calcium	5000	950		20000		•
8. Chromium	10	7.8	·	1000	1140	114
9. Cobalt	50	20		1000		
10. Copper	25	14		2000		
11. Iron	100	37		3000		
12. Lead	5	60	2	1000	1135	114
13. Magnesium	5000	470		10000		
14. Manganese	15	10		2000_		
15. Mercury	0.2	0.16		2.12		
16. Nickel	40	25		1000		
17. Potassium	5000	1530		10000		
18. Selenium	5	114	4.4	50		
19. Silver	10	7.1		400		
20. Sodium	5000	4510		50000	•	
21. Thallium	10		3	50	<u>_</u>	
22. Tin	40	36_	<u>.</u>	1000		
23. Vanadium	50	21	<u>.</u>	2000		
24. Zinc	20	19		1000		
25. Lead(F)	5		2.0	50	52,7	IG,

Form VII

Q.C. Report No.

INSTRUMENT DETECTION LIMITS AND

LABORATORY CONTROL SAMPLE

LAB NAME	JTC Environmental Cons.	CASE NO. HLA-£2#6
DATE	06 102 187	LCS UNITS ug/L mg/kg
		(Circle One)

	Required Detection	Instrument	Detection	1		
Compound	Limits (CRDL)-ug/l	Limits (IDL)-ug/l	Lab Co	ntrol Sa	mple .
		ICP/AA	Furnace	True	Pound	ZR
Metals:				10000		
l. Aluminum	200			10000		
2. Antimony	60	ļ		1000		
3. Arsenic	10			50		
4. Barium	200			1000		
5. Beryllium	5			400		
6. Cadmium	5	<u> </u>	'	400	345	86
7. Calcium	5000			20000		
8. Chromium	10	7.8_		1000	1030	103
9. Cobalt	50			1000		
10. Copper	25			2000		
11. Iron	100			3000		
12. Lead	5		<u>م</u> 0	50	46.2	92
13. Magnesium	5000			10000		
14. Manganese	15			3000		
15. Mercury	0.2		_	2.12		
16. Nickel	40			1000		
17. Potassium	5000			10000		
18. Selenium	5			50		
19. Silver	10	· .		400		
20. Sodium	5000			50000		
21. Thallium	10			50		
22. Tin	40			1000		
23. Vanadium	50	•		2000	·	
24. Zinc	20			1000		
Other:						
Cyanide	10			100		

Form VIII

Q.C. Report No. ____

STANDARD ADDITION RESULTS

LAB NAME J	TC Envir	onmenta	l Coslts.	CASE NO. HUT				
DATE				បា	NITS			
EPA Sample	Element	O ADD	1 ADD CON./ABS ¹	2 ADD CON./ABS. ¹	3 ADD CON./ABS. ¹	FINAL CON.2	 r*	
87-257	Pb	19.7	10/2572	20/31.5	30/35, 2	38	.99	
,				-			 !	
	-						r !	
							 !	
			· .			<u> </u>	l l	
						į	 	
	<u>.</u> .		-				! !	
							! !	
·							 	

¹ CON is the concentration added, ABS. is the instrument readout in absorbance or concentration.

² Concentration as determined by MSA

^{*&}quot;r" is the correlation coefficient.

^{+ -} correlation coefficient is outside of control window of 0.995.

FORM VIII Q.C. REPORT No. STANDARD ADDITION RESULTS (HYICP)

LAB NAME: JTC ENVIRONMENTAL CONSULTANTS, INC.

CASE NO.: 4HLA UNITS: uq/l

DATE: <u>04/21/87</u>

1 ! !	O ADD :		ADD :		ADD :		ADD :	FINAL	<u> </u>
Sample #!El.!	ABS.						/ABS. 1	_	
1 1 1	:		1		1		1		1 1
: GPT1-1,4: PB:	15.901	5/	21.401	10/	27.001	15/	34.001	13.01s	10.9981
1 1	-		ŧ		•		:		1 1
<u>! 1-1DUP,4: PB!</u>	17.001	5/	20.501	10/	28.001	15/	33.201	14.49	<u> 10.9921</u>
									1
: 1-1DUP,4: PB:	16.40	5/	<u> 22.30¦</u>	10/	27.801	15/	32.80:	15.19s	<u> 10.9991</u>
: GPT1-2,5: PB:	18.60	5/	24.601	107	30.30	15/	36 401	15.74s	1 0001
<u> </u>	<u> </u>		<u> </u>	107	30.301	13/	<u> 36.40;</u>	10.745	! !
1-2DUL,5: PB:	18.10	5/	23.80	107	30.90	15/	37.00	14.015	:0.999:
1 1	1		1	10,	1	10,	1	111015	1 1
: GPT1-3,5: PB:	12.90!	5/	17.10	10/	21.30	15/	27.30	13.23s	10.9961
1 1	- 1		1		ŀ	-	;		1 1
: GPT2-1: PB:	<u> 15.90¦</u>	10/	24.801	20/	33.301	30/	40.501	19.78s	10.9991
1(1/4) TH 1 1	:		1		ŧ		:		1 1
<u> GPT2-2 PB:</u>	11.30:	5/	<u> 17.30¦</u>	10/	21.801	<u> 15/</u>	28.201	10.30s	<u>10.9981</u>
									1 1
: GPT2-3: PB:	11.20	5/	15.40	10/	20.10	15/	23.701	13.35s	<u>:0.999;</u>
: : : : : : : : : : : : : : : : : : :	15.90¦	107	26.60¦	307	35.20	207	44 90!	17.06s	i ii ii
! <u>UF13-3; FB;</u>	13.301	10/	<u> </u>	207	33.201	307	44.501	17.065	<u> 10.3331</u>
: GPT4-1.4: PB:	14.00	5/	19.40	10/	25.40	157	30.70	12.445	11.000
1 1 1	1	<u> </u>	1		1		1	<u> </u>	1 1
GPT4-2 PB	4.70	5/	8.90	10/	12.50	15/	17.601	5.41s	10.9981
1 1			1		:		:		1 1
! GPT4-3,5! PB!	20.801	5/	24.601	10/	28.701	15/	33.301	24.775	10.9991
	:		- 1		1		1		1
! GPT5-1,4! PB:	11.60	5/	17.201	10/	23.901	15/	<u> 29.001</u>	9.84s	<u> 10.9991</u>
I ODTE O EL SSI	11 00:	- ,	47.001	10.	00.50:	4-4	1 00 50	0.55	1 0000
: GPT5-2,5; PB:	11.80!	5/	17.00	10/	23,60:	15/	29.501	7.635	<u>:0.999:</u>
: GPT5-3: PB:	33.801	107	45.801	207	53.80¦	207	64 00!	35.05s	!0 997!
1 1	<u> </u>	197		±0/	!	307	<u> </u>	<u> </u>	<u> </u>
: GPT6-31 PB1	23.70	10/	33.10	20/	42.00	30/	51.00	26,245	11.000

12

^{*} CON is the concentration added, ABS is the instrument readout in absorbance or concentration.

Concentration as determined by MSA.

^{* &}quot;r" is the correlation coefficient.

^{+ -} correlation coefficient is outside of control window of 0.995.

Form VIII

Q.C. Report No. __

STANDARD ADDITION RESULTS

LAB NAME J	TC Envir	onmenta.	l ensits.	C.	ase no. HU	DAY	5
DATE	5)14/8	7		U	NITS		
EP A		O AUD	1 ADD	2 ADD	3 ADD	FINAL	•
Sample #	Element	ABS.	CON./ABS1	CON./ABS.1	CON./ABS.1	con.2	[*
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¹ CON is the concentration added, ABS. is the instrument readout in absorbance or concentration.

² Concentration as determined by MSA

^{*&}quot;r" is the correlation coefficient.

^{+ -} correlation coefficient is outside of control window of 0.995.

Form VIII

Q.C. Report No.

STANDARD ADDITION RESULTS

			l Cnslts.	CASE NO. HUT					
DATE 6	2187	_		U	NITS				
EPA		סעג ס	1 ADD	2 ADD	3 ADD CON./ABS.1	FINAL	•		
Sample #		ABS.		·			-		
87-039Z	РЬ	13.5			30 51,7		,991		
1 dup	Pb	120.5	10 33.8	20/45.8	30/57.3	172	1991		
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¹ CON is the concentration added, ABS. is the instrument readout in absorbance or concentration.

4

² Concentration as determined by MSA

^{*&}quot;r" is the correlation coefficient.

^{+ -} correlation coefficient is outside of control window of 0.995.

ACID/BASE-NEUTRALS (CONTROL FORMS)

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: JTC E.	uur. cons. Inc	Contract: HL	-A-52	
Lab Code:	_ Case No.:	SAS No.:	SDG No.:	_ (

							=	
EPA	S1	S2	S3	S4	S5	56		TOT
SAMPLE NO.	•	•	(TPH) #	(PHL) #	(2FP)#			OUT
		~~~		~~~~		======		===
01 KMBK 44-2/17	<u>88</u>	72	8-1	85	70	78		!'
02 SMBK 414-6871	63	60	94	84	78	67		<u> </u>
03   SMBK 4/79/57	90	62	88	78_	77	78		!
04   # SMBK 4121-22	84	71	96	_72_	68	63		<u> </u>
05			ļl			!		!
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S1 (NBZ) = Nitrobenzene-d5 (35-114) S2 (FBP) = 2-Fluorobiphenyl (43-116) S3 (TPH) = Terphenyl-d14 (33-141) S4 (PHL) = Phenol-d5 (10-94) S5 (2FP) = 2-Fluorophenol (21-100) S6 (TBP) = 2,4,6-Tribromophenol (10-123)

# Column to be used to flag recovery values with an asterisk

* Values outside of contract required QC limits

page  $_$  of  $\underline{\cdot}$ 

10/86

# 2C WATER SEMIVOLATILE SURROGATE RECOVERY

Lab	Name:	JTC Env.	Consultants,	<u>In</u> c.	Contract:	HLA-52	
Lab	Code:		Case No.:	3	SAS No.:	SDG No.:	

CLIENT	JTC   SAMPLE NO.	S1   (NBZ)   	S2  (FBP)#	S3   (TPH)	S4  (PHL)#	S5   (2FP) #	S6   (TBP) #		TOT   OUT
Well # 1 Well # 2 Well # 3 Well # 4	87-0249 87-0250 87-0251 87-0252	<u>88</u>   <u>74</u>   <u>56</u>   <u>70</u>	86 67 56	9    <u>17</u>   <u>57</u>   88	<u>83</u>   <u>72</u>   <u>71</u>   87	74 67 64 79	1 70 1 59 1 60 1 95		dddc
Well #5	\$7-0253	76	66	<del>  **/</del> 	96*	79	47		
				 	! !	 	 		

QC LIMITS
S1 (NBZ) = Nitrobenzene-d5 (35-114)
S2 (FBP) = 2-Fluorobiphenyl (43-116)
S3 (TPH) = Terphenyl-d14 (33-141)
S4 (PHL) = Phenol-d5 (10-94)
S5 (2FP) = 2-Fluorophenol (21-100)
S6 (TBP) = 2,4,6-Tribromophenol (10-123)

- # Column to be used to flag recovery values
- * Values outside of contract required QC limits
- D Surrogates diluted out

page _ of _

1/87 Rev.

## 2C WATER SEMIVOLATILE SURROGATE RECOVERY

Lab	Name:	JTC F	Env.	Consultants	, Inc.	Contract:_	HLA-52	
Lab	Code:			Case No.:	4	SAS No.:	SDG No.:	

Nethod Spike   74   64   74   64   63   64   0   0   0   0   0   0   0   0   0										
ID   SAMPLE NO.   (NBZ)   (FBP)   (TPH)   (PHL)   (2FP)   (TBP)     OUT	CLIENT	JTC	Sl	SZ	S3	S4	S5	<b>S</b> 6	•	ITOT
- Hethod Spike 74 64 74 64 63 64 0  - Nethod Spike Nup 82 72 76 78 67 71 0  1-1 87-0261 72 83 57 86 76 69 0  1-2 87-0262 37 77 61 101* 92 86 11  1-3 87-0263 95 85 73 83 72 69 0  2-1 87-0268 93 88 86 142* 132* 162* 13  2-2 87-0269 106 82 69 61 57 70 0  2-3 87-0270 88 77 50 78 71 84 0  3-1 87-0271 81 78 42 56 48 57 0  3-2 87-0272 69 59 30* 52 48 59		SAMPLE NO.	(NBZ) #	(FBP) #	(TPH) #	(PHL) #	[(2FP)#	(TBP) #	ŀ	IOUT
				=====	=====	=====	=====		=====	===
		1 Method Spike	74_	1 64	1 ブル 1	1_64_	1 63 I	64	<b>!</b>	10
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		Hethod Spike Dup	رچج ا	1 73	76	78	· <del>/ _ /</del>	7/	i	10
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1-1			83	57	86	76	69	I	10
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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1-3	87-6263	95	85	73	83	72	69	i	10
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2-1	87-0268		88	86	142*	132*		i	1.3
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1-4-	87-0269	10/0	82		61	.57	70	i —	10
3-1   87-0271   91   78   42   56   48   57   0 3-2   87-0272   69   59   30 *   52   48   59   1 3-3   87-0273   89   82   71   72   67   67   0	2-3					78	71	84		
3-3   87-0273   89   82   71   72   67   67	3-1	87-0271		78		56	48		i ——	10
3-3   87-0273   89   82   71   72   67   67	3-2				30 *				i ——	i
H-1     \$7-0274     63     54     30*     \$2     76     \$5     1	3-3							_ <del></del>	i ———	i
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QC LIMITS
S1 (NBZ) = Nitrobenzene-d5 (35-114)
S2 (FBP) = 2-Fluorobiphenyl (43-116)
S3 (TPH) = Terphenyl-d14 (33-141)
S4 (PHL) = Phenol-d5 (10-94)
S5 (2FP) = 2-Fluorophenol (21-100)
S6 (TBP) = 2,4,6-Tribromophenol (10-123)

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

# 2C WATER SEMIVOLATILE SURROGATE RECOVERY

Lab	Name:	JTC Env.	Consultants,	Inc.	Contract:	HLA-52		
Lab	Code:		Case No.: _	4,5	SAS No.:	SDG	No.:	

<b></b>									
CLIENT	JTC	Sl	S2	<b>5</b> 3	54	S 5	<b>S</b> 6	OTHER	TOT
ID	SAMPLE NO.	(NBZ) #	(FBP) #	[ (TPH) #	(PHL) <b>#</b>	(2FP)#	(TBP) #		OUT
		======	======	=====	=====			=====	===
	1 Method Spike	i <i>90</i>	62	94	i <i>89</i> i	85	109	j	10 i
	Method Soike DuD	55	45	74	68	64	62	i ——	ioi
4-2-	87-0275	73	58	41	61	58	101	i	ibi
5-1	87-0277	85	75	46	73	68	39	i	الم
5-2-	87-0278	84	973	36	79	71	103	i — — —	idi
5-3	87-0279	<del>-///-</del>	93	77	110*	100	717	¦ <del></del>	i 🔭 i
6-2-	87-0281	83	70	49	80	77	75		اغا
6-3	87-0282	107	88	56	$\left  \frac{\partial U}{\partial I} \right $	75	82	¦	
Decor-1	87-0283	82	70	78	63	15	95	i ——	الحا
Decon 2	87-0284	==	51	<del>-48</del> -	55	69	87		iði
GPT 4-3	87-0343	<u> </u>	<del>-21</del>	36	66	<u>-67</u> 53	68		1 <del></del>
GPT 6-1	87-0344	37	3	54	75		75		
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QC LIMITS
S1 (NBZ) = Nitrobenzene-d5 (35-114)
S2 (FBP) = 2-Fluorobiphenyl (43-116)
S3 (TPH) = Terphenyl-d14 (33-141)
S4 (PHL) = Phenol-d5 (10-94)
S5 (2FP) = 2-Fluorophenol (21-100)
S6 (TBP) = 2,4,6-Tribromophenol (10-123)

- # Column to be used to flag recovery values
- * Values outside of contract required QC limits
- D Surrogates diluted out

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# 3C WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:	<u> </u>	Cont	ract: <u>HLA-52</u>	<u>-</u>
Lab Code:	Case No.	: <u>3,4</u> sas	No.:	SDG No.:
Matrix Sp	oike - Sample No	Method S	pike /Spike Du	ip 1

COMPOUND	ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS  CONCENTRATION    (ug/L)	MS   %   REC #	QC    LIMITS    REC.
Phenol   2-Chlorophenol   1,4-Dichlorobenzene   N-Nitroso-di-n-prop.(1)   1,2,4-Trichlorobenzene   4-Chloro-3-methylphenol   Acenaphthene   4-Nitrophenol   2,4-Dinitrotoluene   Pentachlorophenol	180 180 120 12 140 220 130 140 140	000000000000000000000000000000000000000	110 130 63 8 13 130 80 110	67 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	12- 89   27-123   36- 97   41-116   39- 98   23- 97   46-118   10- 80   24- 96   9-103

COMPOUND	SPIKE ADDED (ug/L)	MSD  CONCENTRATION    (ug/L)	MSD % REC #	% RPD #	QC L RPD	IMITS
Phenol	180	1 120	67	9	42	12 <b>-</b> 89
2-Chlorophenol	180	136	72	0	40	27-123
1,4-Dichlorobenzene	120	68	57	<del>-</del> 9	28	36- 97
N-Nitroso-di-n-prop.(1)	12	i 10 i	83	21	38	41-116
1,2,4-Trichlorobenzene	140	1 78 1	56		28	39- 98
4-Chloro-3-methylphenol	220	146	<del>-64</del> 1		42	23- 97
Acenaphthene	130	1 90 1	69	11	31	46-118
4-Nitrophenol	190	120	63	81	50	10- 80
2;4-Dinitrotoluene	140	1 92	<u> </u>	6	38	24- 96
Pentachlorophenol	190	1 79	42	_51	50	9-103
Pyrenei	29	16	<u>55</u>	<u>_6</u> _	31	26-127

### (1) N-Nitroso-di-n-propylamine

# Column to be used to flag recovery and RPD values with an asterisk * Values outside of QC limits
RPD: O out of 11 outside limits Spike Recovery: O out of 22 outside limits
COMMENTS:

### 3C WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab	Name:		JTC		Contract:	HLA		
Lab	Code:		Case No.:					
Mati	rix Sp.	ike -	Sample No.:	: <u>M</u> a	ethod Spike	Spile	Puplicate	2

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE  CONCENTRATION   (ug/L)	MS   CONCENTRATION   (ug/L)	MS & REC #	QC LIMITS REC.
Phenol   2-Chlorophenol   1,4-Dichlorobenzene   N-Nitroso-di-n-prop.(1)   1,2,4-Trichlorobenzene   4-Chloro-3-methylphenol   Acenaphthene   4-Nitrophenol   2,4-Dinitrotoluene   Pentachlorophenol   Pyrene	180 180 120 120 130 130 190 190 29		129 145 67 64 70 161 190 127 146 23	72 81 56 67 50 73 62 100* 91 77	12- 89   27-123   36- 97   41-116   39- 98   23- 97   46-118   10- 80   24- 96   9-103   26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD  CONCENTRATION   (ug/L)	MSD & REC #	   %   RPD #	QC I	IMITS
Phenol 2-Chlorophenol 1,4-Dichlorobenzene N-Nitroso-di-n-prop.(1) 1,2,4-Trichlorobenzene 4-Chloro-3-methylphenol Acenaphthene 4-Nitrophenol 2,4-Dinitrotoluene Pentachlorophenol	180 180 120 12 140 220 130 190	127 137 48 5 46 132 56 143 81	71 79 74 897 75 5	33 t 46 # 41 # 20 36 # 30 48 *	42   40   28   38   28   42   31   50   38   50	12- 8   27-12   36- 9   41-11   39- 9   23- 9   46-11   10- 8   24- 9   9-10

### (1) N-Nitroso-di-n-propylamine

	be used to flag recovery and RPD values with an asterisk tside of QC limits
RPD: <u>5</u> Spike Recov	out of outside limits ery: out of22 outside limits
COMMENTS:	<u> </u>

Lab Name:	JTC	Co:	ntract: HLA		
Lab Code:	Case	No.: 3 s	As No.:	SDG No.:	
Lab File ID:	BNA	128	Lab Sampl	e ID: Metho	d Blank y/1/8;
Date Extracte	ed: <u>4</u>	1/87	Extraction: (S	epF/Cont/Sc	one) CONT
Date Analyzed	ո։ <u>Կ</u>	27/87	Time Anal	yzed:	16:45
Matrix: (soi	l/water) <u>Wo</u>	ter	Level: (lo		•
Instrument II	o:	B			
a THIS MI	ETHOD BLANK A	APPLIES TO THE	FOLLOWING SAMPL	ES, MS AND	MSD:
1-	Client	JTC	LAB	DATE	-1
į	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	_i -i
01	Well #1	87-0249	BNA920	4/23/87	
02 [	11/01/#2	87-0250	BNATAI	42387	<u>.</u> į
	Well #3	87-0251	1 BNA923	1 23,187	- <u> </u>
	Well #4 1	<u>87 -0252</u> <u>87-0253</u>	1 BNH966 1 BNA935	4127187	<u>,</u>
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COMMENTS:					<u> </u>
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	SEMIVOLA'	TILE METHOD BLA	NK SUMMARY				
Lab Name: JTC	Env. Consul	tants, Inc. Con	ntract: HLA-5	52			
Lab Code:	Case	No.: s	AS No.:	SDG No.:			
Lab File ID:	BNAC	119	Lab Sample	ID: Meth	2 Blank 4/4/87		
Date Extracted	1: <u>/</u>	t-4-87	Extraction: (Se	epF/Cont/So	10) CONT		
Date Analyzed:	<u>4</u>	-23-87	Time Analy	yzed:	14:59		
Matrix: (soil/	Matrix: (soil/water) water Level: (low/med)						
Instrument ID:							
THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:							
S	CLIENT AMPLE NO.	JTC SAMPLE ID	LAB FILE ID	DATE ANALYZED			
01		Meshod Spike	BNA 926	4-27-87			
02   03	<del></del>	Morthol Soulce Dup	BNA 927 BNA 929	4-27-87 4-27-87			
04	1-2-	87-0262	BNA 942	4-30-87			

7-20-87 4-28-87 4-28-87 4-28-87 4-28-87 4-28-87 4-28-87 BNA 943 BNA 934 BNA 933 BNA 933 BNA 935 05 j 87-0263 87-0268 87-0269 87-0270 BNA944 BNA945 BNA945 BNA945 87-0271 87-0272 87-0273 87-0274 23 | 

COMMENTS:	

page _ of _

<b>)</b>				•	
Lab Name:	JTC	Con	tract: H	<u> </u>	
Lab Code:	_ Case No.:	4,5 SA	S No.:	SDG No.: _	
Lab File ID:	BNA 95	9_ "	Lab Sampl	e ID: MHE	slank 4/7/8
Date Extracted:	4787		Extraction: (S	epF/Cont/Son	c) CONT
Date Analyzed:	5/5/8	<u>7_</u>	Time Anal	yzed: _	16:35
Matrix: (soil/wat	er) WATE	8	Level: (lo	w/med) _	LOW
Instrument ID:	B_				
THIS METHOD	BLANK APPLI	es to the f	OLLOWING SAMPL	es, ms and m	SD:
-		JTC	LAB	DATE	
<u> </u>			FILE ID	ANALYZED	
01		hod Spike	BNA961	5/6/87	
02   03		d Spike Dup   87-0275	BN 4962 BN 4940	4128102	
04	<u></u>	1	DINFIG CO	1 -11 - 0   8 -	
05 5.		87-0277	BNA 949	5187	
	-3   ·	87-0278	BN 1951	! <u>=5 4]87</u>	
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· 09 j	- <del>2</del> i 3	77-0281	FNA955	1 515 x 1	
441	-3	87-0282	BNA956	558	
11   <u>Deco</u> 12   De pa	20 2	<u>87-0283</u>   87-0284	BAXA958	5/5/87	
13	;——	1-02-87 1	<u> Мул 7.58</u>	<u> </u>	
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23 j <u> </u>	i	i		ii	
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29   30	{				
COMMENTS:	_ <del></del> '			''	

page __ of __

				4	
Lab Name:	<u> </u>	<u>-</u>	contract: HL	<u>4</u>	
Lab Code:	Case	No.: <u>5</u>	SAS No.:	_ SDG No.:	
Lab File ID:	BNAG	163_	Lab Samp	ole ID: Moth	ad Blankyl:
Date Extract	ed: <u>-4</u>	2187	Extraction: (	(SepF/Cont/Sc	inc) CONT
Date Analyze	ed: <u>5</u>	6/87	Time Ana	alyzed:	20:05
Matrix: (soi	l/water) WA	ER	Level:()	low/med)	Low
Instrument I		<u>B</u>			
THIS M	ETHOD BLANK	APPLIES TO T	HE FOLLOWING SAME	PLES, MS AND	MSD:
ı	Client	JTC	LAB	DATE	· ₁
	SAMPLE NO.	SAMPLE ID	•	ANALYZED	ĺ
01	GPT 4-3	81-0343	BNA964	5/1/27	: [
02		87-0344		- 5/6/87	·¦
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COMMENTS:					
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FORM IV SV

1/87 Rev.

# METHOD BLANK SUMMARY

Contractor JTC Environmental Consultants, Inc. Contract No. HLR-52 Case No. 3 4 5 Region ...

SAMPLE NO.	FILE 10	DATE OF FI	FRACTION	MATRIX CONF.	323	M17.10	CAS MUNBER	COMPOUND (HSL,TTC ON UNKNOWN)	COMC.	5115	CAOL
H. Blank 44187	BNR919	18/52/14	D/VG	WATER LOW	<b>3</b>	8		Di-N-Butalohthalate	7	7/6m	10
			Blw					Bis (2-Ethalhexul) Phthalate	5	7/6m	2
			3/km					Di-N-Octulohtholote	5	7/67	0
H. Blank 41/87 BNA928	<b>BNH928</b>	4/27/87 P.N		WATER LOW	30	B		Di-N-Butul of the late	7	7/607	9
,			(A)(B)					Bis (2- Ethylhexul) Pritholote	01	7/6m	0
11.Blank 4/1/87 BNA959	BNA959	5/5/87		WATER LOW	707	В		Di-10-Bitalotholote	8	7/67	0
			BN			-		Bis/2-Ethulhex1) Parthalate	-	7/8m	01
H.Blank 4/21 87 BASA 963	BASH963	5681	B/W	LIPATER LOW	(30)	B		Dr N - But worthoute	5	7/697	0
-			B/W			`.		Bis (2-Ethul hexy) ) Prthalate	8	7/6m	0
		   	<del></del>		ا <del>ب</del> ا	_ }		D. C.			
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Comments:	onts: 411	blanks		37.6	. (	9	ext in con trol.	7			

### 5B

# SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Na	me: TTC Contract: HLA -52	<u></u>
Lab Co	de: Case No.: SAS No.:	SDG No.:
Lab Fi	le ID: OHIGOFTBI DFTPP Injection	Date: 4/16/87
Instru	ment ID: B DFTPP Injection	Time: 8:55
: '	I ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
•	] 30.0 - 60.0% of mass 198	46.53
•	Less than 2.0% of mass 69	0,63 (1.30 )1
69	Mass 69 relative abundance	48.50
	Less than 2.0% of mass 69	1 0.34 (0.71 )1
	40.0 - 60.0% of mass 198	<u> </u>
	Less than 1.0% of mass 198	10.00
	Base Peak, 100% relative abundance	<u> </u>
•	5.0 to 9.0% of mass 198	
•	10.0 - 30.0% of mass 198	
•	Greater than 1.00% of mass 198	1.63
	Present, but less than mass 443	<u> </u>
•	Greater than 40.0% of mass 198	8.38 (17.55)2
1 443	1 11.0 - 53.00 OT mg22 445	<u> </u>

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

2-Value is % mass 442

1-Value is % mass 69

CASE NUMBER:

LABORATORY: JTC CONTRACT: SENS DATE: 04/17/87 SENS TIME: 7:51:00 CALI DATE: 04/17/87 ANALYST: TLH INST ID: BNA2 LAB ID: 0417DFTB

DATA RELEASE AUTHORIZED BY:

	M/E		ION ABUNDANCE CRITERIA	SPEC # 264	
	===				
	51		30 TO 60% OF MASS 198	<b>52. 55</b>	
	68		LESS THAN 2% OF MASS 69	0. 17	( 0.33) 1
	69		MASS 69 RELATIVE ABUNDANCE	54. 45	
	70		LESS THAN 2% OF MASS 69	0. 09	( 0.16) 1
	127		40 TO 60% OF MASS 198	<b>5</b> 2. 33	
	197		LESS THAN 1% OF MASS 198	0. 00	
a	198		BASE PEAK, 100% RELATIVE ABUNDANCE	100.00	
-	199	0	5 TO 9% OF MASS 198	6. 59	
	275		10 TO 30% OF MASS 198	21. 58	
	365		GREATER THAN 1% OF MASS 198	1. 80	
	441		LESS THAN MASS 443	8. 44	
	442		GREATER THAN 40% OF MASS 198	<b>5</b> 8. <b>8</b> 5	
	443		17 TO 23% OF MASS 442	10. 65	(18.11) 2

1 - VALUE IN PARENTHESIS IS % OF MASS 69

2 - VALUE IN PARENTHESIS IS % OF MASS 442

√ SAMPLE	ID	LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
SSTD20	•	0417S1B1	04/17/87	9: 13: 00	BNAZ
SSTD50		04175281	04/17/87	10: 14: 00	BNA2
SSTD80		04175381	04/17/87	11: 13: 00	BNAZ
SSTD120		041754B1	04/17/87	12: 11: 00	BNA2
SSTD160		0417S5B1	04/17/87	13: 11: 00	BNA2
SSTD20		041751B2	04/17/87	14: 34: 00	BNA2

CASE NUMBER: LABORATORY: JTC CONTRACT: HLA-52 INST ID: BNA2 SENS DATE: 04/23/87 SENS TIME: 7:18:00 LAB ID: 0423DFTB1 CALI DATE: 04/17/87 ANALYST: TLH

( NATA RELEASE AUTHORIZED BY:

M/E	ION ABUNDANCE CRITERIA	SPEC # 287	
===		22222222	
51	30 TO 60% OF MASS 198	<b>52</b> . 77	
.68	LESS THAN 2% OF MASS 69	0. 43	( 1.17) 1
69	MASS 69 RELATIVE ABUNDANCE	54. 21	
70	LESS THAN 2% OF MASS 69	0. 00	( 0.00) 1
127	40 TO 60% OF MASS 198	50. 42	
197	LESS THAN 1% OF MASS 198	0. 00	
198	BASE PEAK, 100% RELATIVE ABUNDANCE	100.00	
199	5 TO 9% OF MASS 198	6. 26	
275	10 TO 30% OF MASS 198	21.72	
365	GREATER THAN 1% OF MASS 198	1. 20	
441	LESS THAN MASS 443	8. 48	
442	GREATER THAN 40% OF MASS 198	59. 09	
443	17 TO 23% OF MASS 442	10.09	(17.08) 2

1 - VALUE IN PARENTHESIS IS % OF MASS 69

2 - VALUE IN PARENTHESIS IS % OF MASS 442

SAMPLE ID	ClientID	LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
SSTD50		042352B1	04/23/87	7: 38: 00	BNA2
BOPPB BENZ S	TD —	0423BENZ8	04/23/87	8: 37: 00	BNA2
100PPBPEST	_	0423PEST1	04/23/87	9: 42: 00	BNA2
TOX/METH STD	_	0423MSTD	04/23/87	10: 46: 00	BNAZ
BNA SURR. ST	<b>-</b> a	04235URR	04/23/87	11:46:00	BNA2
87-0212	_	BNA917	04/23/87	12: 52: 00	BNA2
METH BLNK		BNA918	04/23/87	13: 58: 00	BNA2
M BLANK	<b>-</b>	BNA919	04/23/87	14: 59: 00	BNAZ
87-0249	Well #1	BNA920	04/23/87	16: 05: 00	BNAZ
87-0250	Well # 2	BNA921	04/23/87	17: 27: 00	BNA2

CASE NUMBER: #3 LABORATORY: JTC CONTRACT: HLA-52
INST ID: BNA2 SENS DATE: 04/23/87 SENS TIME: 19:39:00

LAB ID: 0423DFTB2 CALI DATE: 04/17/87 ANALYST: RT

DATA RELEASE AUTHORIZED BY:

M/E	ION ABUNDANCE CRITERIA	SPEC # 286	
===		25222222	
51	30 TO 60% OF MASS 198	52. 63	
68	LESS THAN 2% OF MASS 69	0. 00	( 0.00) 1
69	MASS 69 RELATIVE ABUNDANCE	55. 33	
70	LESS THAN 2% OF MASS 69	0. 32	( 0.58) 1
127	40 TO 60% OF MASS 198	51.16	
197	LESS THAN 1% OF MASS 198	0. 00	
198	BASE PEAK, 100% RELATIVE ABUNDANCE	100.00	
199	5 TO 9% OF MASS 198	6. 73	
275	10 TO 30% OF MASS 198	21.47	
365	GREATER THAN 1% OF MASS 198	1. 70	
441	LESS THAN MASS 443	9. 17	
442	GREATER THAN 40% OF MASS 198	53. 41	
443	17 TO 23% OF MASS 442	10. 03	(18.78) 2

^{1 -} VALUE IN PARENTHESIS IS % OF MASS 69 2 - VALUE IN PARENTHESIS IS % OF MASS 442

SAMPLE ID	Client ID	LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
SSTD50 87-0251 87-0252	Well # 3 Well # 4	0423S2B2 BNA923 BNA924	04/23/87 04/23/87 04/23/87	20: 52: 00 21: 58: 00 22: 55: 00	BNA2 BNA2 BNA2

CASE NUMBER: 3,4 INST ID: BNA2

LABORATORY: JTC CONTRACT: HLA-52 SENS DATE: 04/27/87 SENS TIME: 8:16:00

0427DFTB1 CALI DATE: 04/17/87 ANALYST: TLH

/ LAB ID:

DATA RELEASE AUTHORIZED BY:

M/E ION ABUNDANCE CRITERIA SPEC # 258 === ========= 39. 35 51 30 TO 60% OF MASS 198 LESS THAN 2% OF MASS 69 68 0.89 (1.83) 1 MASS 69 RELATIVE ABUNDANCE 69 48. 73 70 LESS THAN 2% OF MASS 69 0.37 (0.76) 1 127 40 TD 60% DF MASS 198 51.17 197 LESS THAN 1% OF MASS 198 0. 94 BASE PEAK, 100% RELATIVE ABUNDANCE 100.00 198 5 TO 9% OF MASS 198 199 6, 63 275 10 TO 30% OF MASS 198 21.96 GREATER THAN 1% OF MASS 198 365 1.41 441 LESS THAN MASS 443 B. 61 442 GREATER THAN 40% OF MASS 198 55. 68 443 17 TO 23% OF MASS 442 9, 65 (17, 33) 2

- 1 VALUE IN PARENTHESIS IS % OF MASS 69
- 2 VALUE IN PARENTHESIS IS % OF MASS 442

SAMPLE ID	Client 10	LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
SSTD50		0427S2B1	04/27/87	B: 50: 00	BNAZ
BOPPB BENZ		0427BENZ8	04/27/87	9: 51: 00	BNA2
BNA SURR STI	· —	0427SURR	04/27/B7	11:46:00	BNAZ
87-0253	Well#5	BNA925	04/27/87	13: 45: 00	BNAZ
MBLNK MS		BNA926	04/27/87	14: 42: 00	BNA2
MBLNK MSD		BNA927	04/27/87	15: 44: 00	BNAZ
M BLANK	-	BNA928	04/27/87	16: 45: 00	BNA2
87-0261	GPT 1-1	BNA929	04/27/87	17: 42: 00	BNAZ
B7-0262	6-PT 1-2	BNA930	04/27/87	1B: 45: 00	BNAZ
87-0263	GPT 1-3	BNA931	04/27/87	19: 44: 00	BNA2

CASE NUMBER: 3,4 LABORATORY: JTC CONTRACT: HLA-52
INST ID: BNA2 SENS DATE: 04/27/87 SENS TIME: 20:38:00
LAB ID: 04/27DFTB2 CALI DATE: 04/17/87 ANALYST: RT

LAB ID:

DATA RELEASE AUTHORIZED BY:

M/E	ION ABUNDANCE CRITERIA	SPEC # 252	
===	##=###################################		
51	30 TO 60% OF MASS 198	45. 41	
68	LESS THAN 2% OF MASS 69	0. 00	( 0.00) 1
69	MASS 69 RELATIVE ABUNDANCE	53. 56	
70	LESS THAN 2% OF MASS 69	0. 00	( 0.00) 1
127	40 TO 60% OF MASS 198	52. 67	
197	LESS THAN 1% OF MASS 198	0. 00	
198	BASE PEAK, 100% RELATIVE ABUNDANCE	100.00	
199	5 TO 9% OF MASS 198	6. 07	
275	10 TD 30% OF MASS 198	23. 04	
365	GREATER THAN 1% OF MASS 198	1. 59	
441	LESS THAN MASS 443	7. 61	
442	GREATER THAN 40% OF MASS 198	55. 26	
443	17 TO 23% OF MASS 442	10. 67	(19.31) 2

1 - VALUE IN PARENTHESIS IS % DF MASS 69

2 - VALUE IN PARENTHESIS IS % OF MASS 442

SAMPLE ID		LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
SSTD50	_	042752B2	04/27/87	20: 54: 00	BNA2

CONTRACT: HLA-52
INST ID: BNA2 SENS DATE: 04/28/87 SENS TIME: 6:39:00

LAB ID: 0428DFTB1 CALI DATE: 04/17/87 ANALYST: TLH

DATA RELEASE AUTHORIZED BY:

M/E	ION ABUNDANCE CRITERIA	SPEC # 261
51	30 TO 60% OF MASS 19B	34. 78
48	LESS THAN 2% OF MASS 69	0.00 (0.00) 1
69	MASS 69 RELATIVE ABUNDANCE	50. 15
70	LESS THAN 2% OF MASS 69	a 0.00 (0.00) 1
127	40 TD 60% OF MASS 198	49. 45
197	LESS THAN 1% OF MASS 198	0. 00
198	BASE PEAK, 100% RELATIVE ABUNDANCE	100. 00
199	5 TO 9% OF MASS 198	6. 70
275	10 TD 30% OF MASS 198	23. 92
365	GREATER THAN 1% OF MASS 198	1. 39
441	LESS THAN MASS 443	9. 68
442	GREATER THAN 40% OF MASS 198	68. 45
443	17 TO 23% OF MASS 442	11.90 (17.38) 2

1 - VALUE IN PARENTHESIS IS % OF MASS 69

2 - VALUE IN PARENTHESIS IS % OF MASS 442

SAMPLE ID	Client ID	LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
SSTD50 80PPB BENZ S BNA SURR STI 87-0269 87-0268 87-0270 87-0271 87-0272		04285281 04288ENZ8 04285URR BNA933 BNA934 BNA935 BNA936 BNA937	04/28/87 04/28/87 04/28/87 04/28/87 04/28/87 04/28/87 04/28/87	7: 11: 00 9: 08: 00 10: 05: 00 12: 03: 00 13: 01: 00 15: 02: 00 16: 00: 00	BNAZ BNAZ BNAZ BNAZ BNAZ BNAZ BNAZ
87-0273	GPT 3-3	BNA938	04/28/87	18: 21: 00	BNA2

CASE NUMBER: #4 LABORATORY: JTC CONTRACT: HLA-52
INST ID: BNA2 SENS DATE: 04/28/87 SENS TIME: 19:45:00

LAB ID: 0428DFTB2 CALI DATE: 04/17/87 ANALYST: RT

DATA RELEASE AUTHORIZED BY:

M/E ===	ION ABUNDANCE CRITERIA	SPEC # 221	
51	30 TO 60% OF MASS 198	49. 13	
68	LESS THAN 2% OF MASS 69	0.00	( 0.00) 1
69	MASS 69 RELATIVE ABUNDANCE	48. 35	
70	LESS THAN 2% OF MASS 69	0. 30	( 0.63) 1
127	40 TO 60% OF MASS 198	49. 05	
197	LESS THAN 1% OF MASS 198	0. 00	
198	BASE PEAK, 100% RELATIVE ABUNDANCE	100.00	
199	5 TO 9% OF MASS 198	6. 43	
275	10 TD 30% OF MASS 198	22. 88	
365	GREATER THAN 1% OF MASS 198	1. 97	
441	LESS THAN MASS 443	9. 13	
442	GREATER THAN 40% OF MASS 198	61. 01	
443	17 TO 23% OF MASS 442	11.85	(19.43) 2

- 1 VALUE IN PARENTHESIS IS % OF MASS 69
- 2 VALUE IN PARENTHESIS IS % OF MASS 442

SAMPLE ID	Client ID	LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
SSTD50	-	042852B2	04/28/87	19: 58: 00	BNAZ
87-0274	GPT 4-1	BNA939	04/28/87	21:05:00	BNA2
87-0275	GPT 4-2	BNA940	04/28/87	22: 04: 00	BNA2
87-0276		BNA941	04/28/87	23: 12: 00	BNA2

CASE NUMBER: 4 LABORATORY: JTC CONTRACT: HLA-52
INST ID: BNA2 SENS DATE: 04/30/87 SENS TIME: 6:55:00
LAB ID: 0430DFTB1 CALI DATE: 04/17/87 ANALYST: TLH

DATA RELEASE AUTHORIZED BY:

M/E	IDN ABUNDANCE CRITERIA	SPEC # 270	
<b>==</b> =	2222222222222222222	*******	
51	30 TD 60% OF MASS 198	42. 98	
68	LESS THAN 2% OF MASS 69	0. 90	( 1.9B) 1
69	MASS 69 RELATIVE ABUNDANCE	45. 51	
70	LESS THAN 2% OF MASS 69	0. 27	( 0.59) 1
127	40 TO 60% OF MASS 198	51. 91	
197	LESS THAN 1% OF MASS 198	0. 00	
198	BASE PEAK, 100% RELATIVE ABUNDANCE	° 100.00	
199	5 TO 9% OF MASS 198	7. <b>5</b> 3	
275	10 TO 30% OF MASS 198	26. 77	
365	GREATER THAN 1% OF MASS 198	3. 17	
441	LESS THAN MASS 443	8. 76	
442	GREATER THAN 40% OF MASS 198	81. 91	
443	17 TO 23% OF MASS 442	14. 78	(1B. 04) 2

1 - VALUE IN PARENTHESIS IS % OF MASS 69

2 - VALUE IN PARENTHESIS IS % OF MASS 442

SAMPLE ID	ClientID	LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
SSTD50 80PPB BENZ ABN SURR STE ABN SPIKE 87-0262 87-0263 87-0271 87-0273 87-0268	 GPT 1-2- GPT 1-3- GPT 3-1 GPT 3-3 GPT 2-1	0430S2B1 0430BENZB 0430SURR 0430SPIKE BNA942 BNA943 BNA944 BNA945	04/30/87 04/30/87 04/30/87 04/30/87 04/30/87 04/30/87 04/30/87	8: 21: 00 10: 20: 00 11: 19: 00 12: 19: 00 13: 26: 00 15: 15: 00 16: 13: 00 17: 19: 00 18: 22: 00	BNA2 BNA2 BNA2 BNA2 BNA2 BNA2 BNA2 BNA2

CASE NUMBER: #4

LABORATORY: JTC

CONTRACT: HLA52

INST ID: BNA2

SENS DATE: 05/01/87 SENS TIME: 6:50:00

LAB ID:

0501DFTB1 CALI DATE: 04/17/87 ANALYST: TLH

DATA RELEASE AUTHORIZED BY:

M/E	ION ABUNDANCE CRITERIA	SPEC # 266		
51	30 TD 60% OF MASS 198	33. 73		
68	LESS THAN 2% OF MASS 69	0. 41	( 0.97)	1
69	MASS 69 RELATIVE ABUNDANCE	42. 51		
70	LESS THAN 2% OF MASS 69	0. 00	( 0.00)	1
127	40 TO 60% OF MASS 198	51. 44		
197	LESS THAN 1% OF MASS 198	0. 28		
198	BASE PEAK, 100% RELATIVE ABUNDANCE	100. 00		
199	5 TO 9% OF MASS 198	6. 23		
275	10 TO 30% OF MASS 198	23. 63		
365	CREATER THAN 1% OF MASS 198	2. 57		
441	LESS THAN MASS 443	<b>9.</b> 38		
442	GREATER THAN 40% OF MASS 198	75. 34		
443	17 TO 23% OF MASS 442	13. 08	(17. 36)	2

- 1 VALUE IN PARENTHESIS IS % OF MASS 69
- 2 VALUE IN PARENTHESIS IS % OF MASS 442

SAMPLE ID	Client ID	LAB ID	DATE ANALYZED	TIME Analyzed	INST ID
SSTD50		0501S2B1	05/01/87	B: 40: 00	BNA2
SSTD50#2		0501S2B2	05/01/87	10: 44: 00	BNA2
BENZ STD		0501BENZ8	05/01/87	11: 44: 00	BNAZ
SSTD50		0501S2B3	05/01/B7	12: 43: 00	BNA2
SURR STD	_	0501SURR	05/01/87	13: 44: 00	BNAZ
BNA949 87027	I GPT 5-1	BNA949	05/01/87	14: 44: 00	BNAZ
<b>!</b>					

CASE NUMBER: #4 LABORATORY: JTC CONTRACT: HLA-52
INST ID: BNA2 SENS DATE: 05/04/87 SENS TIME: 6:27:00
LAB ID: 0504DFTB1 CALI DATE: 04/17/87 ANALYST: TLH

DATA RELEASE AUTHORIZED BY:

M/E	IDN ABUNDANCE CRITERIA	SPEC # 270		
51	30 TD 60% OF MASS 198	35. 09		
68	LESS THAN 2% OF MASS 69	0. 00	( 0.00)	1
69	MASS 69 RELATIVE ABUNDANCE	42. 63		
70	LESS THAN 2% OF MASS 69	0. 57	(1.34)	1
127	40 TO 60% OF MASS 198	<b>52</b> . 11		
197	LESS THAN 1% OF MASS 198	0. 00		
198	BASE PEAK, 100% RELATIVE ABUNDANCE	100.00		
199	5 TO 9% OF MASS 198	6. 52		
275	10 TO 30% OF MASS 198	25. 13		
365	CREATER THAN 1% OF MASS 198	2, 49		
441	LESS THAN MASS 443	10. 57		
442	GREATER THAN 40% OF MASS 198	89. 04		
443	17 TO 23% OF MASS 442	15. 15	(17. 02)	2

1 - VALUE IN PARENTHESIS IS % OF MASS 69

2 - VALUE IN PARENTHESIS IS % OF MASS 442

SAMPLE ID	ClientID	LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
SSTD50		0504S2B1	05/04/87	7: 01: 00	BNA2
BOPPB BENZ	_	0504BENZB	05/04/87	8: 02: 00	BNA2
SURR STD	_	0504SURR	05/04/87	9: 04: 00	BNA2
SSTD50		0504S2B2	05/04/87	10: 04: 00	BNA2
SSTD50#3	_	05045283	05/04/87	15: 46: 00	BNA2
200/100PPB SP	к —	0504SPIKE	05/04/B7	16: 51: 00	BNA2
87-0278	GPT 5-2	BNA951	05/04/87	18: 03: 00	BNAZ

CASE NUMBER: #4 LABORATORY: JTC CONTRACT: HLA-52
INST ID: BNA2 SENS DATE: 05/04/87 SENS TIME: 20:54:00

LAB ID: 0504DFTB2 CALI DATE: 04/17/87 ANALYST: RT

DATA RELEASE AUTHORIZED BY:

M/E	ION ABUNDANCE CRITERIA	SPEC # 255
51	30 TO 60% OF MASS 198	34. 12
68	LESS THAN 2% OF MASS 69	0.84 (1.97) 1
69	MASS 69 RELATIVE ABUNDANCE	42. 88
70	LESS THAN 2% OF MASS 69	0.00 (0.00) 1
127	40 TO 60% OF MASS 198	51. 71
197	LESS THAN 1% OF MASS 198	0. 00
198	BASE PEAK, 100% RELATIVE ABUNDANCE	100. 00
199	5 TO 9% OF MASS 198	6. 64
275	10 TO 30% OF MASS 198	23. 78
365	GREATER THAN 1% OF MASS 198	2. 58
441	LESS THAN MASS 443	10. 05
442	GREATER THAN 40% OF MASS 198	81. 01
443	17 TO 23% OF MASS 442	14. 30 (17. 65) 2

1 - VALUE IN PARENTHESIS IS % OF MASS 69

2 - VALUE IN PARENTHESIS IS % OF MASS 442

SAMPLE ID	Client D	LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
87-027 <del>9</del>	6975-3	BNA953	05/04/87	21: 27: 00	BNA2
87-0280		BNA954	05/04/87	22: 27: 00	BNA2

CASE NUMBER: 4 LABORATORY: JTC CONTRACT: HLA-52
INST ID: BNA2 SENS DATE: 05/05/87 SENS TIME: 6:48:00

_AB ID: 0505DFTB1 CALI DATE: 04/17/87 ANALYST: TLH

DATA RELEASE AUTHORIZED BY:

M/E	ION ABUNDANCE CRITERIA	SPEC # 261		•
51	30 TO 60% OF MASS 198	31. 95		
68	LESS THAN 2% OF MASS 69	0. 25	( 0.60)	1
69	MASS 69 RELATIVE ABUNDANCE	41. 77		
70	LESS THAN 2% OF MASS 69	0. 72	(1.74)	1
127	40 TD 60% DF MASS 198	51. 15		
197	LESS THAN 1% OF MASS 198	0. 00		
198	BASE PEAK, 100% RELATIVE ABUNDANCE	1,00.00		
199	5 TO 9% OF MASS 198	6. 78		
275	10 TO 30% OF MASS 198	<b>25</b> . 09		
365	GREATER THAN 1% OF MASS 198	2. 43		
441	LESS THAN MASS 443	9. 78		
442	CREATER THAN 40% OF MASS 198	75. 75		
443	17 TO 23% OF MASS 442	13. 16	(17.38)	2

1 - VALUE IN PARENTHESIS IS % OF MASS 69

2 - VALUE IN PARENTHESIS IS % OF MASS 442

SAMPLE ID	ClientID	LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
SSTD50	-	0505S2B2	05/05/87	B: 30: 00	BNA2
BOPPB BENZ	~	0505BENZB	05/05/87	9: 31: 00	BNA2
ABN SURR		0505SURR	05/05/87	10: 33: 00	BNA2
B7-0281	GPT 6-2	BNA955	05/05/87	11: 32: 00	BNAZ
87-0282	G-PT 6-3	BNA956	05/05/87	12: 31: 00	BNA2
87-0283	Decon-1	BNA957	05/05/87	14:00:00	BNA2
87-0284	Decond	BNA958	05/05/87	15: 17: 00	BNA2
M BLANK		BNA959	05/05/87	16: 35: 00	BNA2

CASE NUMBER: 4 INST ID: BNAZ

BNA2 SENS DATE: 05/06/87 SENS TIME: 10:37:00
0506DFTB1 CALI DATE: 04/17/87 ANALYST: TLH

LAB ID:

DATA RELEASE AUTHORIZED BY:

M/E	ION ABUNDANCE CRITERIA	SPEC # 259
<b>E E E</b>		22222222

	# # # # # # # # # # # # # # # # # # #		
51	30 TO 60% OF MASS 198	33. 53	
68	LESS THAN 2% OF MASS 69	0. 63	(1.21)1
69	MASS 69 RELATIVE ABUNDANCE	52. 11	
70	LESS THAN 2% OF MASS 69	0. 30	( 0.58) 1
127	40 TO 60% OF MASS 198	55. 07	
197	LESS THAN 1% OF MASS 198	0. 00	
198	BASE PEAK, 100% RELATIVE ABUNDANCE	100.00	
199	5 TO 9% OF MASS 198	6. 16	
275	10 TO 30% OF MASS 198	21. 90	
365	GREATER THAN 1% OF MASS 198	2. 16	
441	LESS THAN MASS 443	7. 07	
442	GREATER THAN 40% OF MASS 198	59. 09	
443	17 TO 23% OF MASS 442	10. 54	(17. B4) 2

^{1 -} VALUE IN PARENTHESIS IS % OF MASS 69 2 - VALUE IN PARENTHESIS IS % OF MASS 442

	-1 . la		DATE	TIME	
SAMPLE ID	ClientID	LAB ID	ANALYZED	ANALYZED	INST ID
SSTD50		0506S2B1	05/06/87	13: 34: 00	BNA2
BOPPB BENZ	-	0506BENZB	05/06/87	14: 40: 00	BNA2
ABN SURR STD	_	0506SURR	05/06/87	15: 37: 00	BNA2
MBLK MS		BNA961	05/06/87	16: 36: 00	BNA2
MBLK MSD	-	BNA962	05/06/87	19: 06: 00	BNA2
MBLK		BNA963	05/06/87	20: 05: 00	BNA2
87-0343	GPT 4-3	BNA964	05/06/87	21:06:00	BNA2
87-0344	GPT 6-1	BNA965	05/06/87	22: 04: 00	BNA2

CASE NUMBER:

LABORATORY: JTC

CONTRACT: HLA-52

( INST ID: BNA2 LAB ID: 0507DF

SENS DATE: 05/07/87 SENS TIME: 6:15:00

0507DFTB1 CALI DATE: 04/17/87 ANALYST: TLH

DATA RELEASE AUTHORIZED BY:

M/E	ION ABUNDANCE CRITERIA	SPEC # 262
51	30 TD 60% OF MASS 198	35. 71
<b>6</b> B	LESS THAN 2% OF MASS 69	0.58 (1.22) 1
69	MASS 69 RELATIVE ABUNDANCE	47. 41
70	LESS THAN 2% OF MASS 69	0. 53 ( 1. 11) 1
127	40 TD 60% OF MASS 198	51. 40
197	LESS THAN 1% OF MASS 198	0. 28
198	BASE PEAK, 100% RELATIVE ABUNDANCE	100. 00
199	5 TO 9% OF MASS 19B	6. 67
275	10 TO 30% OF MASS 198	22. 79
365	GREATER THAN 1% OF MASS 198	2. 22
441	LESS THAN MASS 443	8. 81
442	GREATER THAN 40% OF MASS 198	6B. 49
443	17 TO 23% OF MASS 442	11.66 (17.03) 2

^{1 -} VALUE IN PARENTHESIS IS % OF MASS 69

SAMPLE ID	ClientID	LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
SSTD50		0507S2B1	05/07/87	6: 41: 00	BNA2
BOPPB BENZ		0507BENZ8	05/07/87	7: 45: 00	BNA2
ABN SURR STD		0507SURR	05/07/87	9: 09: 00	BNAZ
87-0357		BNA967	05/07/87	11: 23: 00	BNA2
87-0252	Will #4	BNA966	05/07/87	16: 43: 00	BNAZ
M BLANK		BNA96B	05/07/87	17: 46: 00	BNA2

^{2 -} VALUE IN PARENTHESIS IS % OF MASS 442

CASE NUMBER: LABORATORY: JTC CONTRACT:

INST ID: BNA2 SENS DATE: 05/08/87 SENS TIME: 5:20:00
LAB ID: 0508DFTB1 CALI DATE: 04/17/87 ANALYST: TLH

DATA RELEASE AUTHORIZED BY:

M/E	ION ABUNDANCE CRITERIA	SPEC # 260	
===	######################################	==========	
	20 TO /OV OF MACO 400	20.44	
51	30 TO 60% OF MASS 198	30. 14	
68	LESS THAN 2% OF MASS 69	0. 11	(0.28) 1
69	MASS 69 RELATIVE ABUNDANCE	42. 44	
70	LESS THAN 2% OF MASS 69	0. 55	(1.31)1
127	40 TO 60% OF MASS 198	51. 16	
197	LESS THAN 1% OF MASS 198	0. 15	
198	BASE PEAK, 100% RELATIVE ABUNDANCE	100.00	
199	5 TO 9% OF MASS 198	6. 89	
275	10 TO 30% DF MASS 198	24. 42	
365	GREATER THAN 1% OF MASS 198	2. 34	
441	LESS THAN MASS 443	9. 36	
442	GREATER THAN 40% OF MASS 198	80. 95	
443	17 TO 23% OF MASS 442	13. 86	(17.13) 2

- 1 VALUE IN PARENTHESIS IS % OF MASS 69
- 2 VALUE IN PARENTHESIS IS % OF MASS 442

SAMPLE ID	ClientID	LAB ID	DATE ANALYZED	TIME ANALYZED	INST ID
SSTD50	-	0508S2B1	05/08/87	6: 46: 00	BNA2
BOPPB BENZ STI	<b>-</b>	0508BENZB	05/08/87	B: 35: 00	BNA2
ABN SURR STD		0508SURR	05/08/87	8: 43: 00	BNA2
37-0250		BNA969	05/08/87	11: 43: 00	BNA2
87-0251	NM # 3	BNA970	05/08/87	13: 54: 00	BNA2
SURRB	~	0508SURRB	05/08/87	15: 00: 00	BNA2

#### INITIAL CALIBRATION DATA - SEMIVOLATILE HSL COMPOUNDS

CASE NO: ______ INSTRUMENT ID: BNA2
LABORATORY: JTC CALIBRATION DATE: 04/17/87
CONTRACT NO: ____

LABORATORY ID: 041751B2 041753B1 041755B1 041752B1 041754B1 COMPOUND RF20 RF50 RF 80 RF120 RF160 AVE RRF %RSD N-NITROSD-DIMETHYLAMINE 0.907 0.678 0.739 0.747 0.941 0.802 14 2. 185 2. 052 2. 054 2. 051 2. 141 2. 096 PHENOL з. 2.710 0.901 1.688 1.140 1.583 1.604 MANILINE 43 BIS (2-CHLOROETHYL) ETHER 2. 062 1. 807 1. 858 1. 839 2. 005 1. 914 1. 595 1. 523 1. 505 1. 511 1. 608 1. 548 2-CHLOROPHENOL 1.710 1.595 1.609 1.628 1.700 1.648 1,3-DICHLOROBENZENE 3 1,4-DICHLOROBENZENE 1. 852 1. 728 1. 771 1. 757 1. 858 1. 793 3 BENZYL ALCOHOL 1. 055 1. 006 1. 032 1. 041 1. 101 1. 047 3 1, 2-DICHLOROBENZENE
1, 667
1, 591
1, 600
1, 607
1, 671
1, 627
2-METHYLPHENOL
1, 527
1, 408
1, 447
1, 450
1, 580
1, 482
BIS (2-CHLOROISOPROPYL) ETHER 3, 015
2, 706
2, 685
2, 700
2, 684
2, 758
4-METHYLPHENOL
1, 585
1, 462
1, 525
1, 521
1, 635
1, 546
N-NITROSQ-DI-N-PROPYLAMINE
1, 417
1, 264
1, 283
1, 286
1, 365
1, 323
HEXACHLOROETHANE
0, 682
0, 675
0, 693
0, 740
0, 697
NITRORENZENE √2-METHYLPHENOL 5 √4-METHYLPHENOL 0.465 0.432 0.438 0.432 0.485 0.450 NITROBENZENE ISOPHORONE 0.897 0.829 0.840 0.799 0.853 0.844 2-NITROPHENOL 0. 232 0. 242 0. 241 0. 240 0. 259 0. 243 2,4-DIMETHYLPHENOL 0. 330 0. 299 0. 315 0. 297 0. 343 0. 317 BENZOIC ACID 0.000 0.084 0.106 0.128 0.153 0.118 25 BIS (2-CHLOROETHOXY) METHANE 0.552 0.530 0.538 0.539 0.583 0.548 2,4-DICHLOROPHENOL 0.267 0.276 0.276 0.277 0.287 0.276 2 0. 317 0. 313 0. 312 0. 312 0. 328 0. 316 1, 2, 4-TRICHLOROBENZENE 

 0.317
 0.313
 0.312
 0.312
 0.328
 0.316

 1.120
 1.051
 1.043
 0.914
 0.928
 1.011

 0.477
 0.390
 0.405
 0.389
 0.429
 0.418

 0.145
 0.139
 0.140
 0.140
 0.147
 0.142

 0.282
 0.269
 0.279
 0.285
 0.304
 0.284

 0.727
 0.692
 0.687
 0.681
 0.714
 0.700

 0.152
 0.161
 0.201
 0.189
 0.229
 0.186

 0.315
 0.351
 0.357
 0.365
 0.408
 0.359

 0.000
 0.349
 0.383
 0.372
 0.407
 0.378

 1.222
 1.282
 1.306
 1.259
 1.409
 1.296

 NAPHTHALENE 4-CHLOROANILINE 9 HEXACHLOROBUTADIENE 3 4-CHLORO-3-METHYLPHENOL 4 3 V2-METHYLNAPHTHALENE HEXACHLOROCYCLOPENTADIENE 17 -2,4,6-TRICHLOROPHENOL 9 2, 4, 5-TRICHLOROPHENOL 6 2-CHLORONAPHTHALENE 1, 222 1, 282 1, 306 1, 259 1, 409 1, 296 5 V2-NITROANILINE 0. 000 0. 435 0. 445 0. 437 0. 532 0. 462 10 DIMETHYLPHTHALATE 1. 265 1. 216 1. 216 1. 223 1. 325 1. 249 4

1.782 1.793 1.812 1.729 1.893 1.802

RF - RELATIVE RESPONSE FACTOR

AVE RRF - AVERAGE RELATIVE RESPONSE FACTOR

%RSD - PERCENT RELATIVE STANDARD DEVIATION

* - CCC - CALIBRATION CHECK COMPOUNDS

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

MINIMUM AVE RRF FOR SPCC IS 0.05

MAXIMUM %RSD FOR CCC IS 30%

+ - NOT DETECTABLE AT 20NG

V = not a Priority Pollutant compound

ACENAPHTHALENE

### INITIAL CALIBRATION DATA - SEMIVOLATILE HSL COMPOUNDS (PAGE 2)

CASE NO: _____ INSTRUMENT ID: BNA2
LABORATORY: JTC CALIBRATION DATE: 04/17/B7
CONTRACT NO:

LABORATORY ID:	0417518	12 041752E	0417531 31	31 041754	041755I B1	31	
COMPOUND	RF20	RF50	RF 80	RF120	RF160	AVE RRF	%RSD
J-NITROANILINE ACENAPHTHENE 2, 4-DINITROPHENOL 4-NITROPHENOL DIBENZOFURAN 2, 4-DINITROTOLUENE	0. 000	0. 356	0. 368	0. 37B	0. 390	0. 373	4
ACENAPHTHENE	1.165	1. 147		1.065	1. 195	1.138	4 *
2,4-DINITROPHENOL	0. 000	0. 133	0. 154				15 *
4-NITROPHENOL	0.000	0. 086	0. 095	0. 096	0. 136	0. 103	22 *
✓DIBENZOFURAN	1.712	1.617	1.617				4
2,4-DINITROTOLUENE	0. 382	0. 384	0. 386	0. 383	0.419	0. 391 a	4
2,6-DINITROTOLUENE	0. 320	0. 324	O. 32B				2
DIETHYLPHTHALATE	1. 192	1. 125	1. 124	1. 157		1. 170	5
4-CHLOROPHENYLPHENYL ETHER	0. 565	0. 515	0. 521	0. 532	0. 585	0. 544	6
FLUORENE	1.310	1. 221	1. 225	1.183	1. 337	1. 255	5
FLUORENE -4-NITROANILINE	0. 000	0. 354	0. 351	0. 368		0. 345	4
4,6-DINITRO-O-CRESOL	0. 000	0. 144	0. 155	0. 170	0. 175	0. 161	9
N-NITROSODIPHENYLAMINE	0. 570	0. 502	0. 651	O. 59B	0. 709	0. <b>6</b> 06	13 *
4-BROMOPHENOXYBENZENE	0. 222	0. 223	0. 238	0. 241	0. 254	0. 236	6
HEXACHLOROBENZENE	0. 232	0. 222	0. 233	0. 230	0. 248	0. 233	4 #
PENTACHLOROPHENOL	0. 000	0. 077	0. 085	0. 097	0. 100	0. 090	12_
PHENANTHRENE	1. 167	1. 123	1.160	1.120	1. 236	1. 161	
ANTHRACENE	1. 167	1.136	1. 155	1.138	1. 276	1. 174	5
DI-N-BUTYLPHTHALATE	1. 340	1.358	1. 325	1. 294	1. 470	1. 357	5
FLUORANTHENE	1.002	0. 972	0. 920	0. 983	1. 110	0. 997	7 *
FLUORANTHENE * BENZIDINE ***	0. 000	0. 000	0. 000	0. 000	0. 000	0. 000	52
FIRENE	1. 602	1.552	1.705	1. 622	1. 533	1. 603	4
BUTYLBENZYLPHTHALATE	0. 572	0. 654	0. 728	0. 749	0. 802	0. 701	13
3.3'-DICHLOROBENZIDINE 水米水	0. 000	0.000	0.000	0. 000	0. 000	0. 000	92
BENZO (A) ANTHRACENE	1.072	1.043	1. 075		1. 166	1.089	4
BIS (2-ETHYLHEXYL) PHTHALATE	0. 617	O. B05	0. 920	0. 967	1. 143	O. 890	22
CHRYSENE	1. 202	1.134	1. 154	1. 177	1. 251	1.184	4
DI-N-OCTYLPHTHALATE	1. 127	1.747	2. 176	2. 284	2. 292	1. 925	26 *
BENZO (B) FLUORANTHENE	1. 175	1. 370	1. 346		1. 457	1. 363	9
BÉNZO (K) FLUORANTHENE	1.772	1.688	1.815	1.857	1. 696	1. 765	4
BENZO (A) PYRENE	0 987	1.055	1.162		1. 210	1.127	9 *
INDENO-1,2,3 (C,D) PYRENE	0. 965		1.161		1. 371	1. 204	13
DIBENZO (A,H) ANTHRACENE	0. 657		0. 885	1.057	1. 105	0. 923	19
BENZO (G, H, I) PERYLENE	0.850	1.032	0. 974	1. 132	1. 130	1. 024	12

RF - RELATIVE RESPONSE FACTOR
AVE RRF - AVERAGE RELATIVE RESPONSE FACTOR
%RSD - PERCENT RELATIVE STANDARD DEVIATION
# - CCC - CALIBRATION CHECK COMPOUNDS
#* - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS
MINIMUM AVE RRF FOR SPCC IS 0.05
MAXIMUM %RSD FOR CCC IS 30%
+ - NOT DETECTABLE AT 20NG

*** Initial Calibration data for benzidine and 33'-dichbrobenzidine follow these standards clata.

V = not a Priority Pollutant compound

# SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: <u>JTC Env. Consultan</u>	ts. Inc	. Contr	act: HL	.A-52	_		
Lab Code: Case No.: SAS No.: SDG No.:							
Instrument ID: B Calibration Date(s): 4-6-7							_
Min $\overline{RRF}$ for $SPCC(\sharp) = 0.050$				Max &R	SD for (	CCC(*)	= 30.0%
RRF20 = RRF50 = RRF50 = RRF50 = RRF50 = RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF160= AUID RRF1						[ [ 1	
COMPOUND	  RRF20	  RRF50	RRF80	  RRF120		   RRF   RECCC	RSD
Benzidine	**	**	0.388	0.405	•	•	
3,3' Dichlorobenzidine	i **	**	0.231	0.204	0.268	0-234	13.7
** not detectable at this :		ion Dat	e(s):_L	! 17 87		2000	
Min RRF for SPCC(f) = 0.050				Max &R	SD for	CCC(*)	= 30.0%
	= <u>0417</u> 0= <u>0417</u>		RRF5	0 = <u>८५।</u> 60= <u>८५</u>	78281 17.5581		! ! !
COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160		%     RSD
1,2-Diphenylhydrazine	1.109	[.149	1.213	1.126	1.294	1,178	

CASE ND: #3 STANDARD DATE: 04/23/87

LABORATORY ID: JTC TIME: 7:38:00

CONTRACT NO: HLA-52 STANDARD ID: 042352B1

INSTRUMENT ID: BNA2 CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0423DFTB

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
√N-NITROSO-DIMETHYLAMINE	0. 802	0. 826	-2
PHENOL	2.096	2. 136	-1 *
ANILINE	1.604	0. 915	43
BIS (2-CHLOROETHYL) ETHER	1. 914	1.857	3
2-CHLOROPHENOL	1.548	1. 534	1
1,3-DICHLOROBENZENE	1. 648	° 1. 642	0
1,4-DICHLOROBENZENE	1. 793	1. 792	0 *
BENZYL ALCOHOL	1.047	1.014	3
1,2-DICHLOROBENZENE	1.627	1. 595	2
V2-METHYLPHENOL	1.482	1. 422	4
BIS (2-CHLOROISOPROPYL) ETHER	2. 758	2. 872	-3
4-METHYLPHENOL	1. 546	1. 501	3
N-NITROSO-DI-N-PROPYLAMINE	1. 323	1. 336	0 **
HEXACHLOROETHANE	0. 697	0. 676	3
NITROBENZENE	0. 450	0. 445	1
ISOPHORONE	0. 844	0. 851	0
2-NITROPHENOL	0. 243	0. 235	3 *
2.4-DIMETHYLPHENOL	0. 317	0. 310	2 .
BENZOIC ACID	0.118	0. 105	11
BIS (2-CHLOROETHDXY) METHANE		0. 532	3
2,4-DICHLOROPHENOL	0. 276	0. 262	5 <b>*</b>
1, 2, 4-TRICHLOROBENZENE	0. 316	0. 300	5
NAPHTHALENE	1.011	1. 034	-1
√4-CHLORDANILINE	0. 418	0. 379	9
	0. 142	0. 133	6 *
	0. 284	0. 274	4 *
• =	0. 700	0. 667	5
HEXACHLOROCYCLOPENTADIENE		0. 158	15 **
2,4,6-TRICHLOROPHENOL	0. 359	0. 352	2 *
	0. 378	0. 362	4
2-CHLORONAPHTHALENE	1. 296	1. 300	0
V2-NITROANILINE	0. 462	0. 472	-1
DIMETHYLPHTHALATE	1. 249	1. 206	3
ACENAPHTHALENE	1.802	1.809	0

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

V = not a Priority Pollutant compound

CASE ND: #3 STANDARD DATE: 04/23/87

LABORATORY ID: JTC TIME: 7:38:00

CONTRACT NO: HLA-52 STANDARD ID: 0423S2B1

INSTRUMENT ID: BNA2 CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0423DFTB

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
/3-NITROANILINE	0. 373	0. 361	3
ACENAPHTHENE	1.138	1.156	-1 *
2,4-DINITROPHENOL	0.161	0. 132	18 **
4-NITROPHENOL	0. 103	0. 105	-1 **
✓DIBENZOFURAN	1. 631	1. 659	-1
2,4-DINITROTOLUENE •	0. 391	0. 363	7
2,6-DINITROTOLUENE	0. 329	0. 301	9
DIETHYLPHTHALATE	1. 170	1. 129	4
4-CHLOROPHENYLPHENYL ETHER	0. 544	0. 511	6
FLUORENE	1. 255	1. 243	1
✓4-NITROANILINE	0. 365	0. 344	6
4,6-DINITRO-O-CRESOL	0. 161	0. 139	14
N-NITROSODIPHENYLAMINE	0. 606	0. 515	15 *
4-BROMOPHENOXYBENZENE	0. 236	0. 231	2
HEXACHLOROBENZENE	0. 233	0. 216	7
PENTACHLOROPHENOL	0. 090	0.088	2 *
PHENANTHRENE	1.161	1. 150	1
ANTHRACENE	1.174	1. 144	3 2
DI-N-BUTYLPHTHALATE	1. 357	1. 324	2
FLUORANTHENE	0. <del>9</del> 97	0. 956	4 *
BENZIDINE 未来 米	0. 000	0. 000	0
PYRENE	1. 603	1. 733	<b>-7</b>
BUTYLBENZYLPHTHALATE	0. 701	0. 734	-4
3.3'-DICHLOROBENZIDINE****	0.000	0. 000	0
BENZO (A) ANTHRACENE	1.089	1. 049	4
BIS (2-ETHYLHEXYL) PHTHALATE	0.890	0. <del>9</del> 25	-3
CHRYSENE	1. 184	1.160	2
DI-N-OCTYLPHTHALATE	1. 925	2. 163	-11 *
BENZO (B) FLUORANTHENE	1. 363	1. 223	10
BENZO (K) FLUORANTHENE	1. 765	1. 746	1
BENZO (A) PYRENE	1. 127	1. 041	<b>8</b> *
INDENO-1,2,3 (C,D) PYRENE	1. 204	1. 140	<u>5</u>
DIBENZO (A, H) ANTHRACENE	0. 923	0. 857	7
BENZO (G.H.I) PERYLENE	1.024	0. 982	4

AVERAGE %D FOR CCC IS: 2.7

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

*** Continuing calibration data for benzidine and 3,3'-dichlorobenzo

V - not a Priority Pollutant compound

CASE NO: #3 LABORATORY ID: JTC CONTRACT NO: HLA-52 INSTRUMENT ID: BNA2 SENSITIVITY ID: 0423DFTB

STANDARD DATE: 04/23/87 TIME: 20:52:00 STANDARD ID: 0423S2B2 CALIBRATION DATE: 04/17/87

* MAXIMUM %D FOR CCC IS 25% ** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
√N-NITROSO-DIMETHYLAMINE PHENOL ANILINE BIS (2-CHLOROETHYL) ETHER 2-CHLOROPHENOL	2.096 1.604 1.914	0. 946 2. 151 0. 920 1. 932 1. 563	-17 -2 * 43 0
1,3-DICHLOROBENZENE 1,4-DICHLOROBENZENE  BENZYL ALCOHOL 1,2-DICHLOROBENZENE 2-METHYLPHENOL	1.648 1.793 1.047 1.627 1.482	1.662 1.800 0.938 1.615 1.415	0 0 0 * 10 1 5
BIS (2-CHLORDISOPROPYL) ETHER 4-METHYLPHENOL N-NITROSO-DI-N-PROPYLAMINE HEXACHLOROETHANE NITROBENZENE	2.758 1.546 1.323 0.697 0.450	3. 004 1. 461 1. 356 0. 675 0. 448	1015861303977274321526 4 * * * * * * * * * * * * * * *
ISOPHORONE 2-NITROPHENOL 2,4-DIMETHYLPHENOL	0. 844 0. 243 0. 317	0. 874 0. 222 0. 296	-3 9 * 7
BENZOIC ACID BIS (2-CHLOROETHOXY) METHANE 2,4-DICHLOROPHENOL 1,2,4-TRICHLOROBENZENE NAPHTHALENE	0.118 0.548 0.276 0.316 1.011	0. 062 0. 536 0. 257 0. 303 1. 047	47 2 7 * 4 -3
✓4-CHLOROANILINE HEXACHLOROBUTADIENE 4-CHLORO-3-METHYLPHENOL ✓2-METHYLNAPHTHALENE HEXACHLOROCYCLOPENTADIENE	0.418 0.142 0.284 0.700 0.186	0. 370 0. 141 0. 269 0. 684 0. 138	12 1 * 5 * 2
2, 4, 6-TRICHLOROPHENOL 2, 4, 5-TRICHLOROPHENOL 2-CHLORONAPHTHALENE 2-NITROANILINE DIMETHYLPHTHALATE ACENAPHTHALENE	0.359 0.378 1.296 0.462 1.249 1.802	0.334 0.331 1.218 0.477 1.247 1.748	12 12 -20 3

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION RF - RESPONSE FACTOR FROM DAILY CALIBRATION %D - PERCENT DIFFERENCE ** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS * - CCC - CALIBRATION CHECK COMPOUNDS

· V - not a Priority Pollutant Compound

CASE ND: #3
LABORATORY ID: JTC
CONTRACT NO: HLA-52
INSTRUMENT ID: BNA2
SENSITIVITY ID: 0423DFTB

STANDARD DATE: 04/23/87 TIME: 20:52:00 STANDARD ID: 0423S2B2 CALIBRATION DATE: 04/17/87

MAXIMUM %D FOR CCC IS 25% MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
3-NITROANILINE ACENAPHTHENE 2,4-DINITROPHENOL 4-NITROPHENOL DIBENZOFURAN 2,4-DINITROTOLUENE 2,6-DINITROTOLUENE DIETHYLPHTHALATE 4-CHLOROPHENYLPHENYL ETHER FLUORENE 4-NITROANILINE	0.373 1.138 0.161 0.103 1.631 0.391 0.329 1.170 0.544 1.255 0.365	0. 380 1. 127 0. 102 0. 098 1. 646 0. 386 0. 318 1. 249 0. 285 0. 370	-1 * 37 ** 5 ** 0 1 3 -4 1 -1 0
4,6-DINITRO-O-CRESOL N-NITROSODIPHENYLAMINE 4-BROMOPHENDXYBENZENE	0.161	0. 118 0. 484 0. 217	27 20 *
HEXACHLOROBENZENE PENTACHLOROPHENOL PHENANTHRENE ANTHRACENE	0. 233 0. 090 1. 161 1. 174	0. 222 0. 076 1. 143 1. 150	85 1622 -80 16
DI-N-BUTYLPHTHALATE FLUORANTHENE BENZIDINE *** PYRENE BUTYLBENZYLPHTHALATE 3,3'-DICHLOROBENZIDINE *** BENZO (A) ANTHRACENE BIS (2-ETHYLHEXYL) PHTHALATE CHRYSENE	1.357 0.997 0.000 1.603 0.701 0.000 1.089 0.890 1.184	1.408 1.086 0.000 1.341 0.585 0.000 1.716	**************************************
DI-N-OCTYLPHTHALATE BENZO (B) FLUORANTHENE BENZO (K) FLUORANTHENE	1. 925 1. 363 1. 765	1. 881 1. 654 2. 250	-26 -26
BENZO (A) PYRENE INDENO-1,2,3 (C,D) PYRENE DIBENZO (A,H) ANTHRACENE BENZO (G,H,I) PERYLENE	1. 127 1. 204 0. 923 1. 024	1. 357 1. 064 1. 018 1. 301	-19 * 12 -9 -26

3.0

AVERAGE %D FOR CCC IS:

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION RF - RESPONSE FACTOR FROM DAILY CALIBRATION %D - PERCENT DIFFERENCE ** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS * - CCC - CALIBRATION CHECK COMPOUNDS

V - not a Priority Pollutant compound

*** - continuing calibration data for beindine and 3,3'- déchlaroberg chine follows these stendards data

# SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name. Jr. Env. Consultants, Inc.	CONTract: HLH -0 X	
Lab Code: Case No.:	SAS No.: SDG No.:	
Instrument ID: B Calibrati	ion Date: 4/23/87 Time: 8:37	
Lab File ID: O423RENZ 80 Init. Cal	ib. Date(s): 4/16/87	
	Max &D for CCC(*) = 25.0	•
COMPOUND		
Benzidine	0.449 0.389 13.4 1°	
3,3° Dichlorobenzidine	0.234 0.233 0.4	
Instrument ID:	ion Date: <u>4/23/87</u> Time: 7:38	
Lab File ID: 04235281 Init. Cal	lib. Date(s):4/17/87	
Min RRF50 for SPCC(#) = 0.050	Max *D_for CCC(*) = 25.0	ŧ
COMPOUND	RRF   RRF50   %D	
l 1,2-Diphenylhydrazine	1.178 1.276 8.3	

CASE NO. STANDARD DATE: 04/27/87

LABORATORY ID: JTC TIME: 8:50:00

CONTRACT NO: STANDARD ID: 042752B1

INSTRUMENT ID: BNA2 CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0427DFTB

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
M-NITROSO-DIMETHYLAMINE	0. 802	0. 796	1
PHENOL	2. 096	2. 213	~5 *
✓ANILINE	1.604	Q. 889	45
BIS (2-CHLOROETHYL) ETHER	1. 914	1.839	4
2-CHLOROPHENOL	1. 548	1.520	2
1,3-DICHLOROBENZENE °	1.648	1. 630	1
1,4-DICHLOROBENZENE	1. 793	1.769	1 *
✓BENZYL ALCOHOL	1.047	1.037	1
1,2-DICHLOROBENZENE	1. 627	1. 589	2
√2-METHYLPHENOL	1.482	1. 474	1
BIS (2-CHLOROISOPROPYL) ETHER	2. 75B	3. 163	-14
✓4-METHYLPHENOL	1. 546	1. 554	0
N-NITROSO-DI-N-PROPYLAMINE	1. 323	1. 450	-9 **
HEXACHLOROETHANE	0. 697	0. 458	6
NITROBENZENE	0. 450	0. 456	0
ISOPHORONE	0. 844	0. 883	-4
2-NITROPHENOL	0. 243	0. 228	6 *
2,4-DIMETHYLPHENOL	0. 317	0. 311	2
3ENZOIC ACID	0.118	0.114	3
BIS (2-CHLORDETHDXY) METHANE	0. 548	0. 545	1
2,4-DICHLOROPHENOL	0. 276	0. 270	2 *
1, 2, 4-TRICHLOROBENZENE	0. 316	0. 312	1
NAPHTHALENE	1.011	1.065	-4
✓4-CHLORDANILINE	0. 418	0. 368	12
HEXACHLOROBUTADIENE	0.142	0. 143	0 *
4-CHLORO-3-METHYLPHENOL	0. 284	0. 281	1 #
V2-METHYLNAPHTHALENE	0. 700	0. 720	-2
HEXACHLOROCYCLOPENTADIENE	0. 186	0.137	26 **
2, 4, 6-TRICHLOROPHENOL	0. 359	0. 353	2 *
2,4,5-TRICHLOROPHENOL	0. 378	0. 355	6
2-CHLORONAPHTHALENE	1. 296	1. 254	3
√2-NITROANILINE	0.462	0. 452	2
DIMETHYLPHTHALATE	1. 249	1. 174	6
ACENAPHTHALENE	1.802	1.713	5

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

V- not a Prierity Pollutant compound

CASE ND: STANDARD DATE: 04/27/87

LABORATORY ID: JTC TIME: B: 50: 00

CONTRACT NO: STANDARD ID: 042752B1

CALIBRATION DATE: 04/17/87 INSTRUMENT ID: BNAZ

SENSITIVITY ID: 0427DFTB

# MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
√3-NITROANILINE	0. 373	0. 352	6
ACENAPHTHENE	1. 138	1.116	2 *
2,4-DINITROPHENOL	0.161	0.117	27 **
4-NITROPHENOL	0. 103	0.107	-3 **
DIBENZOFURAN	1.631	1. 593	2
2,4-DINITROTOLUENE	0. 391	0. 365	7
2,6-DINITROTOLUENE	0. 329	0. 299	9
DIETHYLPHTHALATE	1. 170	1.162	1
4-CHLOROPHENYLPHENYL ETHER	0. 544	0. 511	6
FLUORENE	1. 255	1. 202	4
4-NITROANILINE	0. 365	0. 327	10
4,6-DINITRO-O-CRESOL	0.161	0. 128	21
N-NITROSODIPHENYLAMINE	0. 606	0. 473	22 *
4-BROMOPHENOXYBENZENE	0. 236	0. 224	5
HEXACHLOROBENZENE	0. 233	0. 224	4
PENTACHLOROPHENOL	0.090	0. 099	-9 *
PHENANTHRENE	1.161	1.090	6
ANTHRACENE	1. 174	1.109	6
DI-N-BUTYLPHTHALATE	1. 357	1.357	0 .
FLUORANTHENE	0. 997	0. 990	1 #
BENZIDINE * * *	Q. 000	0. 000	0
PYRENE	1. 603	1.765	-9
BUTYLBENZYLPHTHALATE	0. 701	0. 925	~31
3,3'-DICHLOROBENZIDINE ***	0.000	0.000	0
BENZO (A) ANTHRACENE	1.089	1.027	6
BIS (2-ETHYLHEXYL) PHTHALATE	0.890	1. 538	-72
CHRYSENE	1. 184	1. 167	1
DI-N-OCTYLPHTHALATE	1. 925	2. 286	-18 *
BÉNZO (B) FLUORANTHENE	1.363	1. 261	8
BENZO (K) FLUDRANTHENE	1.765	1.825	-2
BENZO (A) PYRENE	1.127	1. 229	-8 *
INDENO-1,2,3 (C,D) PYRENE	1. 204	1. 206	0
DIBENZO (A, H) ANTHRACENE	0. 923	0. 917	1
BENZO (G, H, I) PERYLENE	1.024	1.069	~3

AVERAGE %D FOR CCC IS: -0.2

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

*** - continuing calibration data for bengidene and 3,3'-dichlarobengidene follow these standards data

V - not a Priority Pollutant compound

### SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: JTC	Env. Consultants, Inc. Cont	tract:_ <i>_</i>	1LA-52			
Lab Code:	Case No.: SAS	. No.: _		SDG No.	·:	_
Instrument ID	:B Calibration [	Date: <u>4/2</u>	7/87	Time:	9:51	_
Lab File ID:	<u>0427B€N₹80</u> Init. Calib.	Date(s):	4-16	<del>87</del> .		_
			Max	₹D for	CCC(*) =	25.0%
	COMPOUND	RRF	RRF80	<b>₹</b> D	 	
	Benzidine	10,449	0.358	20,3	!    -	a
	3,3' Dichlorobenzidine	0.234				
Instrument In	: <u>R</u> Calibration [	Date: 4/	27/87	Time:	8:50	
			_	_		
Lab File ID: Min RRF50 for	$SPCC(\frac{4}{3}) = 0.050$	Date(5)			ccc(*) :	- = 25.0%
	COMPOUND	RRF	RRF50	%D		
	1,2-Diphenylhydrazine	1.178	1.161	14		

CASE NO #4

STANDARD DATE: 04/28/87

LABORATORY ID: JTC

TIME: 7:11:00

CONTRACT NO: HLA-52

STANDARD ID: 042852B1

INSTRUMENT ID: BNA2

CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0428DFTB

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
✓N-NITROSO-DIMETHYLAMINE	0.802	0. 915	~13
PHENOL	2. 096	2. 154	-2 *
MANILINE	1.604	0. 869	46
BIS (2-CHLDROETHYL) ETHER	1. 914	1.876	2
2-CHLOROPHENOL	1. 548	1. 559	0
1,3-DICHLOROBENZENE	1. 648	1.647	0
1,4-DICHLOROBENZENE	1. 793	1.776	1 *
BENZYL ALCOHOL	1.047	0. 993	5
1,2-DICHLOROBENZENE	1.627	1.668	-1
2-METHYLPHENOL	1. 482	1.445	3
BIS (2-CHLOROISOPROPYL) ETHER	2. 758	3. 121	-12
4-METHYLPHENOL	1. 546	1.502	3
N-NITROSO-DI-N-PROPYLAMINE	1. 323	1. 385	-4 **
/ HEXACHLOROETHANE	0. 697	0.715	-2
NITROBENZENE	Q. 450	0. 454	0
ISOPHORONE	O. 844	0.845	0
2-NITROPHENOL	0. 243	0. 223	8 *
2,4-DIMETHYLPHENOL	0. 317	0. 306	4
✓BENZOIC ACID	0.118	0. 125	-5
BIS (2-CHLOROETHOXY) METHANE	0. 548	0. 534	3
2,4-DICHLOROPHENOL	0. 276	0. 266	4 *
1,2,4-TRICHLORDBENZENE	0. 316	0. 308	3
NAPHTHALENE	1.011	1.049	-3
✓4-CHLDROANILINE	0.418	0. 357	15
HEXACHLOROBUTADIENE	0.142	0.146	-2 *
4-CHLORO-3-METHYLPHENOL	O. 284	0. 271	5 *
2-METHYLNAPHTHALENE	0. 700	0. 676	3
HEXACHLOROCYCLOPENTADIENE	0.186	0. 149	20 **
2,4,6-TRICHLOROPHENOL	0. 359	0. 358	O *
2,4,5-TRICHLOROPHENOL	0.378	0. 355	6
2-CHLORONAPHTHALENE	1. 296	1. 258	3
2-NITROANILINE	0. 462	0. 473	-1
DIMETHYLPHTHALATE	1. 249	1. 230	5
ACENAPHTHALENE	1.802	1. 776	1

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

V - not a priority pollutant compound

CASE NO: #4 STANDARD DATE: 04/28/87

LABORATORY ID: JTC TIME: 7:11:00

CONTRACT NO: HLA-52 STANDARD ID: 04285281

INSTRUMENT ID: BNA2 CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0428DFTB

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
√3-NITROANILINE	0. 373	0. 373	0
ACENAPHTHENE	, 1.13B	1. 112	2 *
2,4-DINITROPHENOL	° 0. 161	0.120	26 **
4-NITROPHENOL	0. 103	0.114	-10 **
✓ DIBENZOFURAN	1. 631	1. 633	0
2,4-DINITROTOLUENE	0. 391	0. 379	3
2,6-DINITROTOLUENE	0.329	0. 314	5
DIETHYLPHTHALATE	1. 170	1. 213	-3
4-CHLOROPHENYLPHENYL ETHER	0. 544	0. 542	0
FLUORENE	1. 255	1. 249	1
V4-NITROANILINE	0. 365	0. 348	5
4,6-DINITRO-D-CRESOL	0.161	0. 138	14
N-NITROSODIPHENYLAMINE	0.606	0. 480	21 *
4-BROMOPHENOXYBENZENE	0. 236	0. 233	1
HEXACHLOROBENZENE	0. 233	0. 224	4 _
PENTACHLOROPHENOL	0. 090	0. 101	-11 *
* PHENANTHRENE	1. 161	1. 114	4
ANTHRACENE	1. 174	1. 125	4 -
DI-N-BUTYLPHTHALATE	1. 357	1. 417	-3
FLUORANTHENE	0. <del>99</del> 7	1. 033	-3 *
BENZIDINE ***	0.000	0. 000	0
PYRENE	1.603	1.458	9
BUTYLBENZYLPHTHALATE	0. 701	0. 691	1
3,3'-DICHLOROBENZIDINE ★★★	0.000	0. 000	0
BENZO (A) ANTHRACENE	1.089	1.065	2
BIS (2-ETHYLHEXYL) PHTHALATE		0. 915	-2
CHRYSENE	1.184	1. 190	0
DI-N-OCTYLPHTHALATE	1. 925	2. 003	<b>−3</b> *
BENZO (B) FLUORANTHENE	1. 363	1. 327	3
BENZO (K) FLUORANTHENE	1. 765	1. 762	0
BENZO (A) PYRENE	1. 127	1. 280	-13 <b>*</b>
INDENO-1, 2, 3 (C, D) PYRENE	1. 204	1. 171	3
DIBENZO (A,H) ANTHRACENE	0. 923	0. 890	4
BENZO (G, H, I) PERYLENE	1. 024	1.004	2

AVERAGE %D FOR CCC IS: 0.5

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

**+ - continuing calibration data for beigidene and 3,3' -dichlarobenzidine follow these standards data V - net a Priority Pollutent compound

CASE ND: #4 STANDARD DATE: 04/28/87

LABORATORY ID: JTC TIME: 19:58:00

CONTRACT NO: HLA-52 STANDARD ID: 042852B2 INSTRUMENT ID: BNA2 CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0428DFTB

* MAXIMUM %D FOR CCC IS 25%

MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
N-NITROSO-DIMETHYLAMINE	0. 802	0. 878	-8
PHENOL	2. 096	2. 137	-1 <b>*</b>
ANILINE	1.604	0. 905	44
BIS (2-CHLOROETHYL) ETHER	1. 914	1.831	4
2-CHLOROPHENOL	1. 548	1. <b>5</b> 45	0
1.3-DICHLOROBENZENE	1. 648	1.662	0
1,4-DICHLOROBENZENE	1. 793	1. 756	5 *
BENZYL ALCOHOL	1.047	0. 968	8
1,2-DICHLOROBENZENE	1. 627	1. 617	1
2-METHYLPHENOL	1. 482	1.441	3
BIS (2-CHLORDISOPROPYL) ETHER	2. 758	3. 083	-11
/4-METHYLPHENOL	1. 546	1. 497	3
N-NITROSO-DI-N-PROPYLAMINE	1. 323	1.414	-6 **
HEXACHLOROETHANE	0. 697	0. 485	2
NITROBENZENE	0. 450	0. 440	2 2
ISOPHORONE	0. B44	0. 867	-2
* 2-NITROPHENOL	0. 243	0. 215	12 *
2,4-DIMETHYLPHENOL	0. 317	0. 306	4
BENZOIC ACID	0.118	0.106	10
BIS (2-CHLOROETHOXY) METHANE	0. 548	0. 539	2
2,4-DICHLOROPHENOL	0. 276	0. 263	5 <b>*</b>
1,2,4-TRICHLOROBENZENE	0. 316	0. 310	2
NAPHTHALENE	1.011	1.054	-3
√4-CHLORDANILINE	0.418	0. 381	9
HEXACHLOROBUTADIENE	0.142	0. 143	0 *
4-CHLORO-3-METHYLPHENOL	0. 284	0. 285	0 *
V2-METHYLNAPHTHALENE	0. 700	0. 701	0
HEXACHLOROCYCLOPENTADIENE	0. 186	0. 121	35 **
2,4,6-TRICHLOROPHENOL	0. 359	0. 345	4 *
2,4,5-TRICHLOROPHENOL	0. 378	0. 342	10
2-CHLORONAPHTHALENE	1. 296	1. 229	5
2-NITROANILINE	0. 462	0. 465	0
DIMETHYLPHTHALATE	1. 249	1. 285	-2
ACENAPHTHALENE	1.802	1. 732	4

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

not a Priority Pollutant compound

CASE NO: #4 STANDARD DATE: 04/28/87

LABORATORY ID: JTC TIME: 19:58:00

CONTRACT NO: HLA-52 STANDARD ID: 042852B2

INSTRUMENT ID: BNA2 CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0428DFTB

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
√3-NITROANILINE	0. 373	0. 371	1
ACENAPHTHENE	1.138	1. 131	1 *
2,4-DINITROPHENOL	0.161	0. 100	38 **
4-NITROPHENOL	0.103	0.114	-10 **
✓DIBENZOFURAN	1. 631	1. 637	0
2,4-DINITROTOLUENE	0. 391	0. 375	4
2,6-DINITROTOLUENE	0. 329	0. 308	6
DIETHYLPHTHALATE	1. 170	1. 281	-B
4-CHLOROPHENYLPHENYL ETHER	0. 544	0. 547	0
FLUORENE	1. 255	1. 266	0
√4-NITROANILINE	0. 365	0. 356	3
4,6-DINITRO-O-CRESOL	0.161	0. 120	26
N-NITROSODIPHENYLAMINE	0. 606	0. 474	22 *
/ 4-BROMOPHENOXYBENZENE	0. 236	0. 226	4
HEXACHLOROBENZENE	0. 233	0. 238	-1
PENTACHLOROPHENOL	0. 090	0. 091	0 *
PHENANTHRENE	1.161	1. 134	2
ANTHRACENE	1. 174	1. 155	2
DI-N-BUTYLPHTHALATE	1. 357	1.482	-8
· — · · · · · · · · · · · · · · · ·	0. <i>997</i>	1.113	-11 *
BENZIDINE ***	0. 000	0. 000	0
PYRENE	1. 603	1. 431	11
· · <del>-</del> · · · · · · · · · · · · · · · -	0. 701	0. 638	9
3,3'-DICHLOROBENZIDINE ★★★		0. 000	0
BENZO (A) ANTHRACENE	1.089	1. 036	5
BIS (2-ETHYLHEXYL) PHTHALATE		0. 793	11
CHRYSENE	1.184	1. 185	0
DI-N-OCTYLPHTHALATE	1. 925	1.767	8 *
BENZO (B) FLUORANTHENE	1. 363	1. 314	4
BENZO (K) FLUORANTHENE	1. 765	1.818	-2
BENZO (A) PYRENE	1. 127	1. 078	4 *
INDENO-1,2,3 (C,D) PYRENE	1. 204	1.050	13
DIBENZO (A, H) ANTHRACENE	0. 923	0. 744	19
BENZO (G.H.I) PERYLENE	1. 024	0. 878	14

AVERAGE %D FOR CCC IS: 3.5

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

***- continuing colibration data for berzidene & 3,3'-dichleroberzidene feelow these altendands data V- not a Priority Pollutant compound

### SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: JTO	Env. Consultants, Inc	. Contract: #	LA-52	_		
Lab Code:	Case No.:	SAS No.: _		SDG No.	· :	_
Instrument II	D: B Calibr	ation Date: <u>4</u> /2	8/87	Time:	9:08	_
Lab File ID:	0428 BENZ80 Init.	Calib. Date(s)	: <u>4/16/8</u>	Z		_
			Max	₹D for	CCC(*) =	25.0%
	COMPOUND	RRF	RRF80	₹D	[   	
	Benzidine °		0.349	22.3		
	3,3' Dichlorobenzidi	ne   0.234	0.232	0.9		
Instrument II	o: <u>B</u> Calibr	ation Date: <u>4/</u>	2 <i>8 87</i>	Time:	7:11	
Lab File ID:	04285281 Init.	Calib. Date(s)	: <u>4/17/8</u>	<u> </u>		_
	SPCC(#) = 0.050				CCC(*) =	25.0%
,	COMPOUND	RRF	RRF50	&D	1 - 1 -	
	1,2-Diphenylhydrazi	ne   [.178	1,192	1,2		

CASE NO: STANDARD DATE: 04/30/87

LABORATORY ID: JTC TIME: 8:21:00

CONTRACT NO: HLA-52 STANDARD ID: 043052B1

INSTRUMENT ID: BNA2 CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0430DFTB

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	۲D
	2. 096 1. 604	0. 444 2. 205 0. 942 1. 882	45 -4 * 41 2
	1. 548 1. 648	1. 547 1. 644	0
1,4-DICHLOROBENZENE	1.793	1. 783	1 *
BENZYL ALCOHOL	1.047	1. 016	3
	1. 627	1. 641	0
_ ··-···-	1.482	1. 460	2 18
BIS (2-CHLOROISOPROPYL) ETHERMETHYLPHENOL		2. 273 1. 507	3
-MEINTEPHENUL M-NITROSO-DI-N-PROPYLAMINE	1. 546 1. 323	1. 307	1 **
HEXACHLOROETHANE	1. 323 0. 697	1. 311 0. 669	4
VITROBENZENE	0. 450	0. 432	4
	0. 430 0. B44	0. 432	3
	0. 243	0. 202	17 *
2.4-DIMETHYLPHENOL		0. 297	6
	0.118	0. 117	1
BIS (2-CHLOROETHOXY) METHANE		0. 541	1
	0. 276	0. 270	2 *
1, 2, 4-TRICHLOROBENZENE	0. 316	O. 30B	3
NAPHTHALENE	1.011	1. 046	-2
	O. 41B	O. 368	12
	0. 142	0. 142	0 *
· · · · · · · · · · · · · · · · · · ·	0. 284	0. 279	2 *
	0. 700	0. 697	0
HEXACHLOROCYCLOPENTADIENE		0. 130	30 **
2.4.6-TRICHLOROPHENOL	0. 359	0. 338	6 *
· · - · · · · · · · · · · · · · · ·	0. 378	0. 348	8
	1.296	1.307	0
2-NITROANILINE	0. 462	0. 387	16
DIMETHYLPHTHALATE	1. 249	1. 173 1. 785	6
ACENAPHTHALENE	1. 802	1. /83	1

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

20 - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

V - not a Priority Pollutant compound

CASE NO: 4 STANDARD DATE: 04/30/87

LABORATORY ID: JTC TIME: 20:07:00

( CONTRACT NO: HLA-52 STANDARD ID: 0430S2B2 INSTRUMENT ID: BNA2 CALIBRATION DATE: 04/17/B7

SENSITIVITY ID: 0430DFTB

60×601 1115

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
N-NITROSO-DIMETHYLAMINE	0. 802	0. 450	44
	2. 096	2. 122	0 *
ANILINE	1. 604	0. 872	46
BIS (2-CHLOROETHYL) ETHER		1.833	4
2-CHLOROPHENOL	1.548	1. 538	1
		1. 625	1
		1. 796	0 *
1,4-DICHLOROBENZENE  BENZYL ALCOHOL	1. 047	0. 991	5
✓BENZYL ALCOHOL  1,2-DICHLOROBENZENE  ✓2-METHYLPHENOL	1. 627	1. 620	0
V2-METHYLPHENOL	1. 482	1. 422	4
BIS (2-CHLOROISOPROPYL) ETHER	2. 758	2. 079	25
V4-METHYLPHENOL	1. 546	1. 477	5
N-NITROSO-DI-N-PROPYLAMINE	1. 323	1. 282	3 **
HEXACHLOROETHANE	0. 697	0. 647	7
NITROBENZENE	0. 450	0. 410	9
ISOPHORONE	0. 844	0. 821	3
2-NITROPHENOL	0. 243	0. 189	22 *
2,4-DIMETHYLPHENOL	0. 317	0. 297	6.
HEXACHLOROETHANE  NITROBENZENE  ISOPHORONE  2-NITROPHENOL  2. 4-DIMETHYLPHENOL  BENZOIC ACID	0. 118	0. 094	20
BIS (2-CULURUE INUXI) MEINANE	U. 346	0. 527	4
2,4-DICHLOROPHENOL	·· 0. 276	0. 268	3 *
2,4-DICHLOROPHENOL 1,2,4-TRICHLOROBENZENE	0. 316	0. 306	3
NAPHTHALENE	1. 011 0. 418	1. 054	~3
NAPHTHALENE  V4-CHLOROANILINE	0. 418	0. 372	11
HEXACHLURUSUTADIENE		0. 140	1 *
		0. 287	0 *
		0. 692	1
HEXACHLOROCYCLOPENTADIENE	0. 186	0. 107	43 **
2,4,6-TRICHLOROPHENOL	0. 359	0. 319	11 *
2,4,5-TRICHLOROPHENOL		0. 332	12
2-CHLORONAPHTHALENE	1. 296	1. 230	5
	0. 462	0. 391	15
DIMETHYLPHTHALATE	1. 249	1. 241	1
ACENAPHTHALENE	1. B02	1.728	4

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

V - not a Privaty Pollutant compound

CASE NO: 4

STANDARD DATE: 04/30/87

LABORATORY ID: JTC

TIME: 20:07:00

CONTRACT NO: HLA-52

STANDARD ID: 043052B2

INSTRUMENT ID: BNA2

CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0430DFTB

# MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	XD
√3-NITROANILINE	0. 373	0. 338	9
ACENAPHTHENE	1. 138	1.083	5 *
2,4-DINITROPHENOL	0. 161	0. 078	52 **
4-NITROPHENOL	0. 103	0. 098	5 **
DIBENZOFURAN	1. 631	1.601	2
2,4-DINITROTOLUENE	0. 391	0. 335	14
2,6-DINITROTOLUENE	0. 329	0. 287	13
DIETHYLPHTHALATE	1. 170	1. 190	-1
4-CHLOROPHENYLPHENYL ETHER	0. 544	0. 530	3
FLUORENE	1. 255	1. 225	2
✓4-NITROANILINE	0. 365	0. 309	15
4.6-DINITRO-O-CRESOL	0. 161	0. 104	35
N-NITROSODIPHENYLAMINE	0. <b>6</b> 06	0. 480	21 *
4-BROMOPHENOXYBENZENE	0. 236	0. 221	6
HEXACHLOROBENZENE	0. 233	0. 220	6
PENTACHLOROPHENOL	0. 090	0. 092	-1 *
PHENANTHRENE	1. 161	1. 128	3
	1. 174	1. 140	3.
DI-N-BUTYLPHTHALATE	1. 357	1. 376	0
FLUORANTHENE	0. 997	1. 071	-6 *
BENZIDINE ***	0. 000	0. 000	0
PYRENE	1. 603	1. 617	0
BUTYLBENZYLPHTHALATE	0. 701	0. 665	5
3,3'-DICHLOROBENZIDINE ***	0. 000	0. 000	0
BENZO (A) ANTHRACENE	1.089	1.014	7
BIS (2-ETHYLHEXYL) PHTHALATE	0. B90	0. 828	7
CHRYSENE	1. 184	1.148	3
DI-N-OCTYLPHTHALATE	1. 925	1. 923	0 *
BENZO (B) FLUDRANTHENE	1. 363	1. 369	0
BENZO (K) FLUORANTHENE	1. 765	2. 076	-17
BENZO (A) PYRENE	1. 127	1.188	<b>-4 </b> ★
INDENO-1,2,3 (C,D) PYRENE	1. 204	1. 179	2
DIBENZO (A,H) ANTHRACENE	0. 923	O. 820	11
BENZO (G.H.I) PERYLENE	1.024	O. 980	4

AVERAGE %D FOR CCC IS: 4. 0

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

*** - continuing calibration data for berzebne and 3,3'- decklorobenzelle foelows these standards data

V- not a Priority Pollutant ampound

# SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: JTC	Env. Consultants, Inc.	. Contract: <u>HLA</u>	-52_	
Lab Code:	Case No.:	_ SAS No.:	SDG No.:	
	o: <u>B</u> Calibra			_ 10:20
Lab File ID:	0430 BENZ 80 Init. C	alib. Date(s):4/	16/87	
			Max &D for C	CC(*) = 25.0%
	COMPOUND	RRF   RF	RF80   tD	
	Benzidine	. 10.449 0.	266 40.8	
	3,3' Dichlorobenzidin		· ;	
Instrument ID	o: <u>B</u> Calibra	tion Date: <u>4/3<i>0</i>/8</u>	87_ Time: <u>&amp;</u>	1:2/
Lab File ID:	<u>04305281</u> Init. C	alib. Date(s): <u>4/</u>	17/87	
Min RRF50 for	SPCC(#) = 0.050		Max &D for C	CC(*) = 25.0%
	COMPOUND	RRF RR	F50 %D	•
	1,2-Diphenylhydrazin	e   1,178   1.	115 5.3	

CASE NO:

STANDARD DATE: 05/01/87

LABORATORY ID: JTC

TIME: 12:43:00

CONTRACT NO:

STANDARD ID: 050152B3

INSTRUMENT ID: BNA2

SENSITIVITY ID: 0501DFTB

CALIBRATION DATE: 04/17/87

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	٧D
N-NITROSO-DIMETHYLAMINE	0 802	0. 615	23
	2. 096	2. 082	1 *
VANILINE	1. 604	0.860	46
BIS (2-CHLOROETHYL) ETHER		1. 790	7
2-CHLOROPHENOL	1. 548	1. 537	1
1,3-DICHLOROBENZENE	1. 648	1. 648	0
1.4-DICHLOROBENZENE	1. 793	1.804	0 #
BENZYL ALCOHOL	1. 047	0. <del>9</del> 76	7
1.2-DICHLOROBENZENE	1. 627	1. 609	1
✓2-METHYLPHENOL	1. 482	1. 411	5
BIS (2-CHLOROISOPROPYL) ETHER		2. 111	24
4-METHYLPHENOL	1. 546	1. 467	5
N-NITROSO-DI-N-PROPYLAMINE	1. 323	1. 297	2 **
HEXACHLOROETHANE	0. 697	0. 635	9
HEXACHLOROETHANE NITROBENZENE ISOPHORONE 2-NITROPHENOL 2,4-DIMETHYLPHENOL	Q. 450	0. 431	4
ISOPHORONE	0. <del>844</del>	0. 831	2
2-NITROPHENOL	0. 243	0. 193	21 *
2.4-DIMETHYLPHENOL	0. 317	0. 317	0 -
BENZOIC ACID	0. 118	0. 082	31
BIS (2-CHLOROETHOXY) METHANE		0. 530	3
2.4-DICHLOROPHENOL		0. 274	1 #
1, 2, 4-TRICHLOROBENZENE		0. 303	4
NAPHTHALENE V4-CHLOROANILINE	1. 011	1. 049	-3
V4-CHLORDANILINE	0.418	0. 383	8
· · · · · · · · · · · · · · · · · · ·	0. 142	0. 146	-2 *
	0. 284	0. 300	-5 <b>*</b>
2-METHYLNAPHTHALENE	0. 700	0. 704	0
HEXACHLOROCYCLOPENTADIENE		0. 104	44 **
2,4,6-TRICHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2-CHIORONAPHTHAIENE	0. 359	0. 348	3 * 7
2.4.3-IKICHLURUPHENUL	0. 378 1. 296	0. 351 1. 287	í
2-CHLORONAPHTHALENE V2-NITROANILINE	1. 276 0. <b>4</b> 62	1. 287 0. 432	7
DIMETHYLPHTHALATE	0. <del>4</del> 62 1. 249	1. 318	-4
ACENAPHTHALENE	1. 249 1. 802	1. 840	- <del>4</del> -1
ACEMANN I MALENE	I. BUE	1. 040	-1

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

# - CCC - CALIBRATION CHECK COMPOUNDS

V- not a Priority Pollutant compound

CASE NO: STANDARD DATE: 05/01/87

LABORATORY ID: JTC TIME: 12:43:00

CONTRACT NO: STANDARD ID: 050152B3

INSTRUMENT ID: BNA2 CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0501DFTB

# MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
/3-NITROANILINE	0. 373	0. 338	9
ACENAPHTHENE	1.138	1. 159	-1 *
2.4-DINITROPHENOL	0. 161	0. 083	48 **
4-NITROPHENOL	0. 103	0. 120	-15 <b>**</b>
✓ DIBENZOFURAN	1. 631	1. 702	<b>-3</b>
2,4-DINITROTOLUENE	0. 391	0. 354	10
2,6-DINITROTOLUENE	0. 329	0. 307	7
DIETHYLPHTHALATE	1. 170	1. 244	-5
4-CHLOROPHENYLPHENYL ETHER	0. 544	0. 565	-3
FLUORENE	1. 255	1. 293	-2
√4-NITROANILINE	0. 365	0. 320	12
4,6-DINITRO-O-CRESOL	0. 161	0. 111	31
N-NITROSODIPHENYLAMINE	0. 606	O. 51B	15 *
4-BROMOPHENOXYBENZENE	0. 236	0. <b>23</b> 2	2
HEXACHLOROBENZENE	0. 233	0. 236	0
PENTACHLOROPHENOL	0. 090	0. 100	-10 *
PHENANTHRENE	1. 161	1. 176	0
ANTHRACENE	1. 174	1. 196	<b>-1</b> .
	1. 357	1. 430	-4
FLUORANTHENE	0. <del>997</del>	1. 127	-12 *
	0. 000	0. 000	0
PYRENE	1. 603	1. 473	8
	0. 701	0. 662	6
3,3'-DICHLOROBENZIDINE ****		0. 000	0
BENZO (A) ANTHRACENE	1.089	1. 031	5
BIS (2-ETHYLHEXYL) PHTHALATE		0. 829	7
CHRYSENE	1. 184	1. 150	3
	1. 925	1. 707	11 *
BENZO (B) FLUORANTHENE	1. 363	1. 226	10
BENZO (K) FLUORANTHENE	1. 765	1. 789	0
BENZO (A) PYRENE	1. 127	1. 139	0 *
INDENO-1,2,3 (C,D) PYRENE	1. 204	1. 181	2
DIBENZO (A, H) ANTHRACENE	0. 923	0. 887	4
BENZO (G.H.I) PERYLENE	1. 024	1. 028	0

AVERAGE %D FOR CCC IS: 1.7

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

*** - continuing collection data for berzidine and 3,3'-decklaraberzident follows fless standards data

V - not a Priority Pollutant compound

# SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: JTC	Env. Consultants, Inc. Con	ntract: <u>A</u>	tch-02		
Lab Code:	Case No.: Si	AS No.: _		SDG No	·:
Instrument I	D: B Calibration	Date: <u>5/</u>	11/87	Time:	11:44
Lab File ID:	050  BEN≥ 80 Init. Calib.	Date(s)	: 4/16/8	<u> </u>	
			Hax	tD for	CCC(*) = 25.0%
	COMPOUND	RRF	RRF80	   <b>\</b> D	 
	Benzidine	0.449	0.407	9.4	ļ
	3,3' Dichlorobenzidine	10.234	0.238	l l 1.7	: 1 1
	o: <u>B</u> Calibration				12:43
Lab File ID:	<u>0601 \$283</u> Init. Calib.	. Date(s)			
Min RRF50 for	SPCC(#) = 0.050		Max 	₹D for	CCC(*) = 25.0%
	COMPOUND	RRF	RRF50	   %D  -====	] 
	1 1,2-Diphenylhydrazine	1.178	1,121	4.8	1   

CASE ND: ---

STANDARD DATE: 05/04/87

LABORATORY ID: JTC

TIME: 15:46:00

CONTRACT NO: ---

STANDARD ID: 0504S2B3

INSTRUMENT ID: BNA2

CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0504DFTB

# MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
✓N-NITROSO-DIMETHYLAMINE	0. 802	0. 538	33
PHENOL	2. 096	2. 199	-4 *
✓ANILINE	1.604	2. 671	-65
BIS (2-CHLOROETHYL) ETHER	1. 914	1. 954	-1
2-CHLOROPHENOL	4. 548	1. 605	-3
1,3-DICHLOROBENZENE	1. 648	1. 730	-4
1,4-DICHLOROBENZENE	1. 793	1. 857	-3 *
BENZYL ALCOHOL	1. 047	1.040	1
1,2-DICHLOROBENZENE	1. 627	1.708	-4
√2-METHYLPHENOL	1. 482	1. 510	-1
BIS (2-CHLOROISOPROPYL) ETHER	2. 758	2. 206	20
√4-METHYLPHENOL	1. 546	1. 597	-2
N-NITROSO-DI-N-PROPYLAMINE	1. 323	1. 339	0 **
HEXACHLOROETHANE	0. 697	0. 653	6.
NITROBENZENE	0. 450	0. 483	-6
ISOPHORONE	0. 844	0. 933	-9
· 2-NITROPHENOL	0. 243	0. 217	11 *
2.4-DIMETHYLPHENOL	0. 317	0. 387	-21
✓BENZOIC ACID	0. 118	0. 100	15
BIS (2-CHLOROETHOXY) METHANE	0. 54B	0. 582	-5
2,4-DICHLOROPHENOL	0. 276	0. 303	-9 *
1, 2, 4-TRICHLOROBENZENE	0. 316	0. 343	<del>-</del> 7
NAPHTHALENE	1.011	1. 116	-9
V4-CHLOROANILINE	0. 418	0. 500	-19
HEXACHLOROBUTADIENE	0. 142	0. 162	-13 *
4-CHLORO-3-METHYLPHENOL	0. 284	0. 319	-11 *
✓2-METHYLNAPHTHALENE	0. 700	0. 757	<del>-</del> 7
HEXACHLOROCYCLOPENTADIENE	0. 186	0. 169	9 **
2,4,6-TRICHLOROPHENOL	0. 359	0. 350	Э *
2,4,5-TRICHLOROPHENOL	0. 378	0. 366	3
2-CHLORONAPHTHALENE	1. 296	1. 337	-2
✓2-NITROANILINE	0. 462	0. 428	7
DIMETHYLPHTHALATE	1. 249	1. 318	-4
ACENAPHTHALENE	1. 802	1. 808	0

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

V - not a Prienty Polletant compound

CASE NO: ---

STANDARD DATE: 05/04/87

LABORATORY ID: JTC

TIME: 15:46:00

CONTRACT NO: ---

STANDARD ID: 05045283

INSTRUMENT ID: BNA2

CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0504DFTB

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

	COMPOUND	AVE RRF	RF50	٧D	
·	3-NITROANILINE	0, 373		11	
	—··		1. 104	3	*
	2,4-DINITROPHENOL	0. 161	0. 097	40	
	4-NITROPHENOL		0. 115	-11	**
V	DIBENZOFURAN	1. 631	1. 628	0	
	2,4-DINITROTOLUENE	0. 391	0. 353	10	
	2,6-DINITROTOLUENE	0. 329	0. 308	6	
	DIETHYLPHTHALATE	1. 170	1. 231	-4	
	4-CHLOROPHENYLPHENYL ETHER	0. 544	0. 567	-3	
	FLUORENE	1. 255	1. 253	0	
ν	/4-NITROANILINE	0. 365	0. 303	17	
	4,6-DINITRO-O-CRESOL	0. 161	0. 121	25	
	N-NITROSODIPHENYLAMINE	0. 606	0. 627	-2	*
	4-BROMOPHENOXYBENZENE	0. 236	0. 237	0	
	HEXACHLOROBENZENE	0. 233	0. 231	1	
	PENTACHLOROPHENOL	0. 090	0. 096	-6	*
-	PHENANTHRENE	1. 161	1. 138	2	
		1. 174	1. 194	-1	•
	· <del>-</del>	1. 357	1. 483	-8	
	FLUORANTHENE	0. 997	1. 073	<b>-7</b>	*
	BENZIDINE ***	0. 000	0. 000	0	
		1.603	1. 580	1	
	BUTYLBENZYLPHTHALATE	0. 701	0. 727	-3	
	3.3'-DICHLOROBENZIDINE ***	0. 000	0. 000	0	
	BENZO (A) ANTHRACENE	1.089	1. 077	1	
	BIS (2-ETHYLHEXYL) PHTHALATE		0. 961	-7	
	CHRYSENE	1. 184	1. 206	-1	
	DI-N-OCTYLPHTHALATE	1. 925	1. <del>9</del> 77	-2	*
	BENZO (B) FLUORANTHENE	1. 363	1. 240	9	
	BENZO (K) FLUDRANTHENE	1. 765	1. 639	7	
	BENZO (A) PYRENE	1. 127	1. 218	<del>-</del> 7	*
	INDENO-1,2,3 (C,D) PYRENE	1. 204	1. 125	7	
	DIBENZO (A, H) ANTHRACENE	0. 923	0. 837	9	
	BENZO (G, H, I) PERYLENE	1. 024	1.018	1	

AVERAGE %D FOR CCC IS: -3.6

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

*** - continuing calibration data for bezidine - and 3,3 - dichlaroberiz dine follows these standards data

V - not a Prienty Pollutent compound

### SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: JTC	Env. Consultants, Inc	. Contract:f	1LA-52	<u> </u>		
Lab Code:	Case No.:	_ SAS No.: _		SDG No.	·:	-
Instrument ID	: _B Calibra	tion Date: <u>5/</u>	4/87	Time:	8:02	_
Lab File ID:	05048ENZ80 Init. C	alib. Date(s)	:4/16/87	<del>7</del> -		_
			Max	₹D for	CCC(*) =	25.0%
	COMPOUND	RRF	RRF80	<b>₹</b> D	]   	
	Benzidine *	10449	0.258	425	! !	
	3,3' Dichlorobenzidin	e 10.234	0.190	18.8		
Instrument ID	: <i>B</i> Calibra	tion Date: _ 5	<u> 14/87</u>	Time:	15:46	_
Lab File ID:		alib. Date(s)				_
	SPCC(1) = 0.050			tD for	CCC(*) =	
	COMPOUND	RRF	RRF50	%D		
I	1,2-Diphenylhydrazin	e   1.178	1.108	5.9		

CASE NO: STANDARD DATE: 05/05/87

LABORATORY ID: JTC TIME: 8:30:00

CONTRACT NO: STANDARD ID: 050552B2

CALIBRATION DATE: 04/17/87 INSTRUMENT ID: BNA2

SENSITIVITY ID: 0505DFTB

MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	٧D
N-NITROSO-DIMETHYLAMINE	0. 802	0. 363	55
PHENOL	2. 096	2. 068	1 *
ANILINE	1.604	0. 791	51
BIS (2-CHLOROETHYL) ETHER	1. 914	1. 780	7
2-CHLOROPHENOL	1. 548	1. 512	2
1.3-DICHLOROBENZENE	1. 648	1. 610	2
1,4-DICHLOROBENZENE	1. 793	1. 767	2 *
BENZYL ALCOHOL	1. 047	0. 968	8
1,2-DICHLOROBENZENE	1. 627	1. 577	3
/2-METHYLPHENOL	1. 482	1. 391	6
BIS (2-CHLOROISOPROPYL) ETHER	2. 758	2. 044	26
4-METHYLPHENOL	1. 546	1. 427	8
N-NITROSO-DI-N-PROPYLAMINE	1. 323	1. 228	7 **
HEXACHLORDETHANE	0. 697	0. 617	12
NITROBENZENE	0. 450	0. 420	7
ISOPHORONE	O. 844	0. B12	4
2-NITROPHENOL	0. 243	0. 199	18 *
2.4-DIMETHYLPHENDL	0. 317	0. 295	7 .
BENZOIC ACID	0.118	0. 056	53
BIS (2-CHLORDETHOXY) METHANE	O. 54B	0. 521	5
2,4-DICHLOROPHENOL	0. 276	0. 267	3 *
1, 2, 4-TRICHLOROBENZENE	0. 316	0. 306	3
NAPHTHALENE	1.011	1.095	<del>-</del> 7
/4-CHLORDANILINE	0.418	0. 364	13
HEXACHLOROBUTADIENE	0. 142	0. 143	0 #
4-CHLORO-3-METHYLPHENOL	0. 284	0. 270	5 <b>*</b>
V2-METHYLNAPHTHALENE	0. 700	0, 707	0
HEXACHLOROCYCLOPENTADIENE	0. 186	0. 112	40 **
2,4,6-TRICHLOROPHENOL	0. 359	0. 335	7 *
2,4,5-TRICHLOROPHENOL	0. 378	0. 331	12
2-CHLORONAPHTHALENE	1. 296	1. 305	0
2-NITROANILINE	0. 462	0. 378	18
DIMETHYLPHTHALATE	1. 249	1, 195	4
ACENAPHTHALENE	1. 802	1. 789	1
	· <del>-</del>		-

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

V- not a Priority Pollutant compound

CASE NO:

STANDARD DATE: 05/05/87

LABORATORY ID: JTC

TIME: 8:30:00

CONTRACT NO:

STANDARD ID: 0505S2B2

INSTRUMENT ID: BNA2

CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0505DFTB

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	۲D
3-NITROANILINE	0. 373	0. 309	17
ACENAPHTHENE	1. 13B	1. 102	3 *
2,4-DINITROPHENOL	0. 161	0.068	58 <b>**</b>
4-NITROPHENOL	0. 103	0. 077	25 **
DIBENZOFURAN 4	1. 631	1. 633	0
2,4-DINITROTOLUENE	0. 391	0. 314	20
2,6-DINITROTOLUENE	0. 329	0. 27B	16
DIETHYLPHTHALATE	1. 170	1.068	9
4-CHLOROPHENYLPHENYL ETHER	0. 544	0. 532	2
FLUORENE	1. 255	1.198	5
√4-NITROANILINE	0. 365	0. 27B	24
4,6-DINITRO-O-CRESOL	0. 161	0. 091	44
N-NITROSODIPHENYLAMINE	0. 606	0. 516	15 #
4-BROMOPHENDXYBENZENE	0. 236	0. 227	4
HEXACHLOROBENZENE	0. 233	0. 220	6
PENTACHLOROPHENOL	0. 090	O. 080	11 *
PHENANTHRENE	1. 161	1. 135	2
	1. 174	1. 155	2 .
DI-N-BUTYLPHTHALATE	1. 357	1. 339	1
FLUORANTHENE	0. <del>99</del> 7	0. 936	6 *
: _: _ : : : : : : : : : : : : : : :	0.000	0.000	O 👙
PYRENE	1. 603	1. 605	0
BUTYLBENZYLPHTHALATE	0. 701	0. 652	7
3,3'-DICHLOROBENZIDINE 未来未	0. 000	0. 000	0
BENZO (A) ANTHRACENE	1.089	1. 007	8
BIS (2-ETHYLHEXYL) PHTHALATE		0. 875	2
CHRYSENE	1. 184	1. 169	1
DI-N-OCTYLPHTHALATE	1. 925	2. 092	<del>-</del> 8 *
BENZO (B) FLUORANTHENE	1. 363	1. 511	-10
BENZO (K) FLUORANTHENE	1. 765	1.830	-3
BENZO (A) PYRENE	1. 127	1. 313	<b>-15</b> *
INDENO-1,2,3 (C,D) PYRENE	1. 204	1. 152	4
DIBENZO (A, H) ANTHRACENE	0. 923	0. 858	7
BENZO (G, H, I) PERYLENE	1. 024	1. 052	-2

AVERAGE %D FOR CCC IS:

3.7

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

*** - continuing calibration data in bezidence and 3,3'-dichlorobergian foclousoffice standards data

V - not a Privily Pollutant compound

### SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: JTC	Env. Consultants, Inc	. Contract: <u> </u>	1LA-52	<del></del>	
Lab Code:	Case No.:	Case No.: SAS No.:		SDG No.:	
Instrument II	D: B Calibr	ation Date: 5/3	5/87	Time:	9:31
Lab File ID:	0505 BENZ 80 Init.	Calib. Date(s)	: <u>4/16/8</u>	7	
			Max	₹D for	CCC(*) = 25.0
	СОМРОИИД	RRF	RRF80	   &D	!
	Benzidine	0,449	[ #====#	20.0	1 
	3,3' Dichlorobenzidi	10 234	0.244	l .	<del>1</del> !
	o: <u>B</u> <b>ca</b> libr				_8:30
Lab File ID:	05055282 Init.	Calib. Date(s)	: <u>4/17/8</u>	7	
Min RRF50 for	SPCC(#) = 0.050		Max	*D for	ccc(*) = 25.
	COMPOUND	RRF	RRF50	\$D	
					-

SASE NO:

STANDARD DATE: 05/06/87

_ABORATORY ID: JTC

TIME: 13:34:00

CONTRACT NO:

INSTRUMENT ID: BNA2

STANDARD ID: 050652B1

CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0506DFTB

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	۲D
✓N-NITROSO-DIMETHYLAMINE	O. B02	0. 479	40
PHENOL	2. 096	2. 165	-2 *
ANILINE	1. 604	0. 979	39
BIS (2-CHLOROETHYL) ETHER	1. 914	1. B70	2
2-CHLOROPHENOL	1. 548	1. 565	0
1.3-DICHLOROBENZENE	1.648	1. 721	-3
1,4-DICHLOROBENZENE	1. 793	1. B54	-2 *
VBENZYL ALCOHOL	1. 047	0. <del>9</del> 84	6
1,2-DICHLOROBENZENE	1. 627	1. 691	-3
√2-METHYLPHENOL	1. 482	1. 47B	0
BIS (2-CHLORDISOPROPYL) ETHER	2. 758	2. 191	21
√4-METHYLPHENOL	1. 546	1. 569	0
N-NITROSO-DI-N-PROPYLAMINE	1. 323	1. 289	3 **
HEXACHLORDETHANE	0. 697	0. 689	1
NITROBENZENE	0. 450	0. 466	-3
TSOPHORONE	O. 844	0. 891	-5
\ 2-NITROPHENOL	0. 243	0. 218	10 *
2,4-DIMETHYLPHENOL	0. 317	0. 347	-8
✓BENZOIC ACID	0. 118	0. 141	-18
BIS (2-CHLOROETHOXY) METHANE		0. 591	<b>-7</b>
2,4-DICHLOROPHENOL	0. 276	0. 310	-11 *
1, 2, 4-TRICHLOROBENZENE	0. 316	0. 363	~14
NAPHTHALENE	1.011	1. 138	-12
✓4-CHLOROANILINE	0. 418	0. 436	-3
HEXACHLOROBUTADIENE	0. 142	0. 162	~13 *
4-CHLDRO-3-METHYLPHENOL	0. 284	0. 324	~13 *
V2-METHYLNAPHTHALENE	0. 700	0. 802	-14
HEXACHLOROCYCLOPENTADIENE	0. 186	0. 139	25 **
2,4,6-TRICHLOROPHENOL	0. 359	0. 326	9 *
2,4,5-TRICHLOROPHENOL	O. 37B	0. 348	8
2-CHLORONAPHTHALENE	1. 296	1. 251	4
√2-NITROANILINE	0. 462	0. 371	20
DIMETHYLPHTHALATE	1. 249	1. 212	3
ACENAPHTHALENE	1.802	1. 730	4

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

++ - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS +- CCC - CALIBRATION CHECK COMPOUNDS

V - not a Prisrity Pollutant compound

CASE NO: STANDARD DATE: 05/06/87

LABORATORY ID: JTC TIME: 13:34:00

CONTRACT NO: STANDARD ID: 0506S2B1

INSTRUMENT ID: BNA2 CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0506DFTB

# MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
√3-NITROANILINE	0. 373	0. 318	15
ACENAPHTHENE	1. 138	1. 114	2 *
2,4-DINITROPHENOL	0. 161	0. 078	52 **
4-NITROPHENOL	0. 103	0. 088	15 **
✓DIBENZOFURAN	1. 631	1. 597	2
2.4-DINITROTOLUENE	0. 391	0. 324	17
2,6-DINITROTOLUENE	0. 329	0. 294	11
DIETHYLPHTHALATE	1. 170	1. 123	4
4-CHLOROPHENYLPHENYL ETHER	0. 544	O. 550	0
FLUORENE	1. 255	1. 207	4
4-NITROANILINE	0. 365	O. 286	22
4,6-DINITRO-O-CRESOL	0. 161	0. 110	32
N-NITROSODIPHENYLAMINE	0. 606	0. 542	11 *
4-BROMOPHENOXYBENZENE	0. 236	0. 234	1
HEXACHLOROBENZENE	0. 233	0. 211	9
PENTACHLOROPHENOL	0. 090	0. 092	<b>-1 *</b>
· PHENANTHRENE	1. 161	1.117	4 ·
· ANTHRACENE	1. 174	1. 127	4
DI-N-BUTYLPHTHALATE FLUDRANTHENE BENZIDINE ***	1. 357	1. 256	7
FLUORANTHENE	0. 997	0. 952	5 #
BENZIDINE ***	0. 000	0. 000	0
FIREIRE	1. 603	1. 678	-4
BUTYLBENZYLPHTHALATE	0. 701	0. 73B	-4
3,3'-DICHLOROBENZIDINE ***	0. 000	<b>O</b> . <b>O</b> OO	0
BENZO (A) ANTHRACENE	1. 089	1.080	1
BIS (2-ETHYLHEXYL) PHTHALATE		0. 911	-1
CHRYSENE	1.184	1. 233	-3
DI-N-OCTYLPHTHALATE	1. 925	2. 048	-5 <b>*</b>
BENZO (B) FLUORANTHENE	1. 363	1. 313	4
BENZO (K) FLUORANTHENE	1. 765	1. 836	-3
BENZO (A) PYRENE	1. 127	1. 246	-10 <b>*</b>
	1. 204	1. 093	9
DIBENZO (A, H) ANTHRACENE	0. 923	0. 805	13
BENZO (C, H, I) PERYLENE	1. 024	0. <del>99</del> 3	3

AVERAGE %D FOR CCC IS: -1.5

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC .- CALIBRATION CHECK COMPOUNDS

***- continuing calibration data for benjidene and 3,3'- declarably de follows these standards data

1- not a Priority Pollutant compound

## SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: JTC	Env. Consultants, Inc. Cor	itract: H	LA-52					
Lab Code: Case No.: SAS No.: SDG No.:								
Instrument II	D: Calibration	Date: 5/6	1/87 1	ine: 14:40	_			
Lab File ID:	0506BENZ80 Init. Calib.	Date(s):	4/16/87	<del>-</del>	_			
			Max &D	for CCC(+)	= 25.0₹			
	COMPOUND	RRF	RRF80	\$D				
	Benzidine 9	0,449	0.382 1	4.9				
	3,3' Dichlorobenzidine	10.234	0.240	2.6				
Lab File ID:	o: B Calibration  o506 \$\frac{1}{2}\beta  \text{Init. Calib.}		4/17/87					
Min RRF50 for	SPCC(#) = 0.050		max 61	o_for CCC(*)	- 25.00			
	COMPOUND	RRF	RRF50	%D				
	1 1,2-Diphenylhydrazine	1.178	1.081 8	?,3 <u> </u>				

## CONTINUING CALIBRATION CHECK - SEMIVOLATILE HSL COMPOUNDS ( PAGE 1 )

CASE NO:

STANDARD DATE: 05/07/87

_ABORATORY ID: JTC

TIME: 6:41:00

CONTRACT NO:

STANDARD ID: 0507S2B1

INSTRUMENT ID: BNA2

SENSITIVITY ID: 0507DFTB

CALIBRATION DATE: 04/17/87

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
✓N-NITROSO-DIMETHYLAMINE	O. B02	0. 444	45
PHENOL	2. 096	1. 951	7 #
VANILINE	1. 604	0.818	49
BIS (2-CHLOROETHYL) ETHER	1. 914	1. 877	2
2-CHLOROPHENOL	1. 548	1. 512	2
1,3-DICHLOROBENZENE	1. 64B	1. 716	-3
1,4-DICHLDROBENZENE	1. 793	1. 819	0 #
✓BENZYL ALCOHOL	1. 047	0. <del>9</del> 77	7
1,2-DICHLOROBENZENE	1. 627	1. 677	-2
√2-METHYLPHENOL	1. 482	1. 441	3
BIS (2-CHLOROISOPROPYL) ETHER	2. 758	2. 191	21
V4-METHYLPHENOL	1. 546	1. 498	3
N-NITROSO-DI-N-PROPYLAMINE	1. 323	1. 279	3 **
HEXACHLORDETHANE	0. 6 <del>9</del> 7	0. <b>6</b> 86	2
NITROBENZENE	0. 450	0. 466	-3
( TSOPHORONE	O. 844	O. 868	-2
~ 2-NITROPHENOL	0. 243	0. 219	10 *
2,4-DIMETHYLPHENOL	0. 317	0. 310	2
✓BENZOIC ACID	0.118	0. 115	3
BIS (2-CHLOROETHOXY) METHANE	0. 548	0. 587	-6
2,4-DICHLOROPHENOL	0. 276	0. 299	<b>−7 #</b>
1,2,4-TRICHLDROBENZENE	0. 316	0. 356	-12
NAPHTHALENE	1. 011	1. 105	-B
√4-CHLOROANILINE	0. 418	O. 409	2
HEXACHLOROBUTADIENE	0. 142	0. 167	-17 #
4-CHLORO-3-METHYLPHENOL	0. 284	0. 310	~B *
√2-METHYLNAPHTHALENE	0. 700	0. 791	-12
HEXACHLOROCYCLOPENTADIENE	0.186	0. 154	17 **
2,4,6-TRICHLOROPHENOL	0. 359	0. 325	10 *
2,4,5-TRICHLOROPHENOL	0. 378	<b>0</b> . <b>3</b> 33	12
	1. 296	1. 214	6
✓2-NITROANILINE	0. 462	0. 375	19
DIMETHYLPHTHALATE	1. 249	1. 215	3
ACENAPHTHALENE	1. 802	1. 695	6

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

XD - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

# - CCC - CALIBRATION CHECK COMPOUNDS

V- not a Privity Pollutent compound

# CONTINUING CALIBRATION CHECK - SEMIVOLATILE HSL COMPOUNDS ( PAGE 2 )

CASE NO: STANDARD DATE: 05/07/87

_ABDRATORY ID: JTC TIME: 6:41:00

CONTRACT NO: STANDARD ID: 05075281

INSTRUMENT ID: BNA2 CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0507DFTB

# MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
√3-NITROANILINE	0. 373	0. 317	15
ACENAPHTHENE	1. 138	1. 055	7 *
2,4-DINITROPHENOL	0. 161	0.090	44 **
4-NITROPHENOL	o. 103	0. 078	24 **
√DIBENZOFURAN	1. 631	1. 557	5
2,4-DINITROTOLUENE	0. 391	0. 319	18
2,6-DINITROTOLUENE	0. 329	0. 304	8
DIETHYLPHTHALATE	1. 170	1.091	7
4-CHLOROPHENYLPHENYL ETHER	0. 544	0. 557	-1
FLUORENE	1. 255	1. 198	5
√4-NITROANILINE	0. 365	0. 291	20
4,6-DINITRO-O-CRESOL	0. 161	0. 114	29
N-NITROSODIPHENYLAMINE	0. 606	0. 497	18 *
4-BROMOPHENOXYBENZENE	0. 236	0. 225	5
HEXACHLOROBENZENE	0. 233	0. 217	7
PENTACHLOROPHENOL	0. 090	0. 089	1 *
- PHENANTHRENE	1. 161	1.093	6 ·
ANTHRACENE	1. 174	1. 118	5
DI-N-BUTYLPHTHALATE	1. 357	1.280	6
FLUORANTHENE	0. 997	1.039	<b>-3</b> * ·
BENZIDINE ***	0. 000	0. 000	0
PYRENE	1. 603	1.488	7
BUTYLBENZYLPHTHALATE	0. 701	0. 705	0
3,3'-DICHLOROBENZIDINE 米米米	0. 000	0. 000	0
BENZO (A) ANTHRACENE	1.089	1.057	3
BIS (2-ETHYLHEXYL) PHTHALATE	O. 890	0. 972	<b>-</b> B
CHRYSENE	1. 184	1. 184	0
DI-N-OCTYLPHTHALATE	1. 925	2. 048	-5 *
BENZO (B) FLUORANTHENE	1.363	1. 284	6
BENZO (K) FLUORANTHENE	1. 765	1. 613	9
BENZO (A) PYRENE	1. 127	1. 164	-2 *
INDEND-1,2,3 (C,D) PYRENE	1. 204	1. 180	2
DIBENZO (A, H) ANTHRACENE	0. <del>9</del> 23	0. B64	6
BENZO (G.H.I) PERYLENE	1.024	0. 986	4

AVERAGE XD FOR CCC IS: 0.8

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC -- CALIBRATION CHECK COMPOUNDS

*** - continuing calibration data for benziline and 3,3'- decollorobenzidine fellow these standards data V - not a Priority Pollutant compound

# SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: JTC	Env. Consultants, In	c. Contract: _h	11A-52	
Lab Code:	Case No.:	SAS No.: _	SDG 1	lo.:
Instrument ID	: B calib	ration Date: 5/	7/87 Time	: 7:45
Lab File ID:	asozbenzeo Init.	Calib. Date(s)	: <u>4/16/87</u>	
			Max &D fo	or CCC(*) = 25.0%
	COMPOUND	RRF	RRF80   &D	-   
3	Benzidine	0.449	0,425 5.3	_i
, I	3,3' Dichlorobenzid	ine 0,234	0.255 9.0	i
Instrument ID	: <u>B</u> Calib			e: <u>6:41</u>
Lab File ID:	0507528/ Init.	Calib. Date(s)		
Min RRF50 for	SPCC(#) - 0.050		Max &D f	or CCC(*) = 25.0%
	COMPOUND	RRF	RRF50 %D	
	1,2-Diphenylhydraz	ine   1.178	1.066 9.5	

# CONTINUING CALIBRATION CHECK - SEMIVOLATILE HSL COMPOUNDS ( PAGE 1 )

CASE NO: STANDARD DATE: 05/08/87

LABORATORY ID: JTC TIME: 6:46:00

CONTRACT NO: STANDARD ID: 05085281

INSTRUMENT ID: BNA2 CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0508DFTB

# MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	۲D
N-NITROSO-DIMETHYLAMINE	0. 802	0. 378	53
PHENOL	2. 096	2. 12B	0 #
ANILINE	1. 604	0. 884	45
	1. 914 _a	1. 813	5
2-CHLOROPHENOL	1. <b>5</b> 48	1. 536	1
1.3-DICHLOROBENZENE	1. 648	1. 651	0 .
1.4-DICHLOROBENZENE	1. 793	1. 784	1 *
BENZYL ALCOHOL	1. 047	1.015	3
1.2-DICHLOROBENZENE	1. 627	1. 662	-1
2-METHYLPHENOL	1. 482	1. 486	0
BIS (2-CHLORDISOPROPYL) ETHER		2. 196	20
4-METHYLPHENOL	1. 546	1. 560	0
N-NITROSO-DI-N-PROPYLAMINE	1. 323	1. 276	4 **
HEXACHLOROETHANE	0. 697	0. 673	3
NITROBENZENE	0. 450	O. 4B4	<del>-</del> 7
ISOPHORONE	0. 844	0. 841	0
2-NITROPHENOL	0. 243	0. 228	6*
2.4-DIMETHYLPHENOL	0. 317	O. 360	-13
BENZOIC ACID	0.118	0. 151	-27
BIS (2-CHLOROETHOXY) METHANE	0. 548	0. <del>5</del> 81	<b>-</b> 5
2,4-DICHLOROPHENOL	0. 276	0. <b>32</b> 3	-16 #
1, 2, 4-TRICHLOROBENZENE	0. 316	0. 364	-14
NAPHTHALENE	1.011	1. 060	-4
4-CHLOROANILINE	0. 418	0. 446	-6
· · - · · · · · · · · · · · · · - · - · - · - · - · - · · - · · - · · -	0. 142	0. 166	-16 #
4-CHLORO-3-METHYLPHENOL	0. 284	0. 341	<b>-17</b> *
2-METHYLNAPHTHALENE	0. 700	0. B1B	-16
	0. 186	0. 143	23 **
· - · · · - · · · · · · · · · · · · · ·	0. 359	0. 325	10 *
2,4,5-TRICHLOROPHENOL	0. 37B	0. 343	9
2-CHLORDNAPHTHALENE	1. 296	1. 205	7
2-NITROANILINE	0. 462	0. 382	17
DIMETHYLPHTHALATE	1. 249	1. 273	-1
ACENAPHTHALENE	1. 802	1. 625	10

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

## CONTINUING CALIBRATION CHECK - SEMIVOLATILE HSL COMPOUNDS ( PAGE 2 )

CASE NO:

STANDARD DATE: 05/08/87

LABORATORY ID: JTC

TIME: 6:46:00

CONTRACT NO:

STANDARD ID: 05085281

INSTRUMENT ID: BNA2

CALIBRATION DATE: 04/17/87

SENSITIVITY ID: 0508DFTB

# MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.05

COMPOUND	AVE RRF	RF50	%D
3-NITROANILINE	0. 373	0. 354	5
ACENAPHTHENE	1. 138	1.039	9 *
2.4-DINITROPHENOL	0. 161	0. 112	30 **
4-NITROPHENOL	0. 103	0. 094	9 **
DIBENZOFURAN	1. 631	1. 569	4
2,4-DINITROTOLUENE	0. 391	0. 342	13
2,6-DINITROTOLUENE	0. 329	0. 309	6
DIETHYLPHTHALATE	1. 170	1. 194	-1
4-CHLOROPHENYLPHENYL ETHER	0. 544	0. 555	-1
FLUORENE	1. 255	1. 197	5
4-NITROANILINE	0. 365	0. 344	6
4.6-DINITRO-O-CRESOL	0. 161	0. 131	19
N-NITROSODIPHENYLAMINE	0. 606	0. 516	15 *
4-BROMOPHENOXYBENZENE	0. 236	0. 218	8
HEXACHLOROBENZENE	0. <b>23</b> 3	0. 213	9
PENTACHLOROPHENOL	0. 090	0. 107	-18 *
PHENANTHRENE	1. 161	1.013	13
ANTHRACENE	1. 174	1. 072	9
DI-N-BUTYLPHTHALATE	1. 357	1. 155	15
FLUORANTHENE	0. <i>997</i>	0. <del>9</del> 94	0 *
BENZIDINE	0. 000	0. 000	0
PYRENE	1. 603	1. 631	-1
BUTYLBENZYLPHTHALATE	0. 701	0. 731	-3
3,3'-DICHLOROBENZIDINE	0. 000	<b>0</b> . <b>0</b> 00	0
BENZO (A) ANTHRACENE	1.089	1. 104	0
BIS (2-ETHYLHEXYL) PHTHALATE	O. 890	0. 918	-2
CHRYSENE	1. 184	1. 237	-3
DI-N-OCTYLPHTHALATE	1. 925	1. 998	-3 *
BENZO (B) FLUORANTHENE	1. 363	1. 347	1
BENZO (K) FLUORANTHENE	1. 765	1. 776	0
BENZO (A) PYRENE	1. 127	1. 242	-9 *
INDENO-1,2,3 (C,D) PYRENE	1. 204	1. 140	5
DIBENZO (A, H) ANTHRACENE	0. 923	0. 836	9
BENZO (G.H.I) PERYLENE	1. 024	0. <del>9</del> 70	5

AVERAGE %D FOR CCC IS: -3.0

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

## SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Hame. Dic	Env. Consultants, Inc. Co	ontract: <u>H</u>	1H-6 a	-	
Lab Code:	Case No.: S	AS No.: _		SDG No.	.:
Instrument ID	: B Calibration	Date: 5	18 187	Time:	8:35
Lab File ID:	0508 BEN780 Init. Calib	. Date(s):	4/16/8	7.	
			Hax	tD for	CCC(*) = 25.0%
	COMPOUND	RRF	RRF80	₹D	(   
,	Benzidine *	10 449	0.315	29.8	 
{	3,3' Dichlorobenzidine	10.234	0.203	13.2	
Instrument ID	: <u>B</u> Calibration				6:46
Lab File ID:	0508 \$281 Init. Calib	Date(s)			<del></del>
Min RRF50 for	SPCC(#) = 0.050		Max	tD for	CCC(*) = 25.0%
	COMPOUND	RRF	RRF50	*D	2 + 3 <del>à</del>
	1,2-Diphenylhydrazine	1.178	0.879	25.4	

# VOLATILE ORGANIC ACIDS (CONTROL FORMS)

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## 2A WATER VOLATILE SURROGATE RECOVERY

Lab	Name: <u>JTC</u>	Env. C	Consultants,	Inc.	Contract:_	HLA-52		
Lab	Code:	<del></del>	Case No.:	3+4+	SAS No.:	SDG	No.:	

CLIENT ID	JTC	Sl	<b>  52</b>	<b>S</b> 3	OTHER	TOT
CLIENT ID	SAMPLE NO.	(TOL) #	(BFB) #	(DCE) #	<b>l</b>	OUT
=======	********	****	****		****	===
Well #	1 87-1249	96_	1 /03	88	1	0
Well #2	87-0250	99	107	93		0
Well #3	87-0251	101	103	94		0
Well #4	87-0252	95	101	90		0
Well #5	87-0253	95	101	82		0
GPT I-1	87-0261	101	103	94		$\overline{o}$
G-PT 1-2 1	87-0262	100	103	93		
6-PT 1-3 1	87-0263		_/03	93		
GPT 2-1	87-0268	701	_/03	94		0
GPT 2-2	87-0269	101	<u> </u>	93		0
GPT 2-3 1	87-0270	_101	104	93		1_0_
<u>GPT 3-1 1</u>	87-0271	101	<u>_/03</u> _1	93		0_
GPT 3-2	87-0272	101	104	92		0_
GPT 3-3 1	<u>87 - 0273</u>	_/05_1	102	<u>93</u>	·	_0_
GPT 4-1 1	87-0274	<u> </u>	_ <i>_/03</i>	94	l <u> </u>	_0_
691 4-2	87-0275	<i></i> _ا	<i></i>	92		0_
GPT 43 1	87-0343	<u>/04</u>	98	94		0
GPT 5-1 1	87-6277	102-1	102	ا <u>سته9</u> ا	l	_0_
GPT 5-2	87-0278	_/0/_	_104_	<u>93</u>		0
6PT 5-3 1	87-0279	102	98	94		0
GPT 6-1	87-0344	102	96	94		_في
GPT 6-2 !	87-0281	_/00_	98	94		<u>_0</u> _
GPT 6-3	87-0282	100	98	94		_0_
Deca-1	87-0283	100	98	ا حرو		_م_
Dun	87-0284	_ <i></i>	98_	<u> </u>		0
TripBlenk!	<u>x7-0285</u>	100	<u>/00</u> !	94		2
GPT4-3 M5	87-0343MS	102	<u>98</u>	7/-		0
GPT 43MSD!	<u>87-0343450</u>	102-!	_/0-0_!	96		2
	!	!	!			
	/					

QC LIMITS

S1 (TOL) = Toluene-d8 (88-110) S2 (BFB) = Bromofluorobenzene (86-115) S3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

- # Column to be used to flag recovery values
- * Values outside of contract required QC limits
- D Surrogates diluted out

ge __ of __

## 2A WATER VOLATILE SURROGATE RECOVERY

Lab	Name: <u>JTC</u>	Env.	Consultants,	Inc.	Contract	:: <u>H</u> LA-5	2	
Lab	Code:		Case No.:	3+40	5sas no.	· <b>:</b>	SDG No.:	

CLIENT	TD	T JTC	l Si	S2	<b>S</b> 3	OTHER	TOT
CLIENT	ID	SAMPLE NO.	(TOL) #	(BFB) #	(DCE) #	1	TUO
====:	===		-			****	===
		184X 41287 AM	1_/03	97	93	1	i 0 i
		INBLKH 187 PM	706	92	101		<u> </u>
		VBLK W3 87	1 98	98	88		iði
		VBLK 4/7/87	102	100	. 96		i o i
		1 VBHY 4187	100	98	94		i o i
		VBLK 4/8/87	98	100	94	i——	izi
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QC LIMITS

S1 (TOL) = Toluene-d8 S2 (BFB) = Bromofluorobenzene (88-110)

(86-115) S3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

- # Column to be used to flag recovery values
- * Values outside of contract required QC limits
- D Surrogates diluted out

ige __ of __

## 3A WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

i-p	Name:	<u>J</u> T	<u>C</u>	Contr	act: HLA-	.52	
Lab	Code: _		Case No.: _	3 sas	No.:	· SDG No.: _	
Mati	rix Spik	e - HLA	Sample No.:	Production	Lwell#1		
		JTC	Sample No.:	87-024	19		

	SPIKE	SAMPLE	MS	MS	QC I
1	ADDED	CONCENTRATION	CONCENTRATION	8	LIMITS
COMPOUND	(ug/L)	(ug/L)	(ug/L)	REC #	REC.
			=======		
1,1-Dichloroethene	<u> </u>	1 5U	11 <u>5</u> 1	101	61-145
Trichloroethene	50	<u> 5u</u>	53		71-120
Benzene	50	1 <b>5</b> u _	50	_100	76-127
Toluene	50		56	78	76-125
Chlorobenzene	50	1 5U	55	110	75-130
					lI

	SPIKE	MSD	MSD		1	
1.	ADDED	CONCENTRATION	<b>                                     </b>	🕏	QC L	IMITS
COMPOUND	(ug/L)	(ug/L)	REC #	RPD #	RPD	REC.
				======		=====
1,1-Dichloroethene	_70	i <u>75</u> i	107	i_ O_	14	61-145
Trichloroethene	50	5.3	106		14	71-120
Benzene	50	5	102	2	11	76-127
Toluene	_50	51	100	2	13	76-125
Chlorobenzene	50	55	70	0	13	75-130
					1	1

Column to be used to flag recovery and RPD values with an asterisk
Values outside of QC limits
PD: O out of outside limits pike Recovery: O out of 10 outside limits
DMMENTS:

# JA WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab	Name:_	JTC	Env.	Consulta	ints, Inc.	Contr	act: H	LA-52	<b>:</b>	
Lab	Code:			Case No	.: <u>4</u>	SAS	No.:	\$	DG No.:	· ·
Mati	rix Spi	ke -	Clie	ent ID:_	GPT 1-	3	J:	TC SAMPL	e no: <u>87-0</u>	263

° COMPOUND	SPIKE ADDED (ug/L)	SAMPLE  CONCENTRATION   (UG/L)	MS  CONCENTRATION   (Ug/L)	REC #	QC  LIMITS    REC.
1,1-Dichloroethene Trichloroethene Benzene Toluene Chlorobenzene	70 50 50 50 50	50 50 50 50 50	71 48 51 51 46		=====    61-145    71-120    76-127    76-125    75-130

N. C.	SPIKE	MSD	MSD	1	Γ	:
	ADDED	CONCENTRATION	" <b>♦</b> · _" .	- 🕏	CC T	imits
COMPOUND	(ug/L)	(ug/L)	REC #	RPD #	RPD	REC.
<b>电影中国 电电影电影电影电影电影电影电影电影电影</b>	******	**********				
1,1-Dichloroethene	_70	. 69	98	<u>3</u>	j 14	61-145
Trichloroethene	50	<del></del>	98	2	14	71-120
Benzene	50	حور 5	104	2	11	76-127
Toluene	50	51	102	0	13	76-125
Chlorobenzene_	50	48	96	4	13	75-130
<u> </u>					·	l <u></u> 1

Column to be used to flag recovery and RPD values with an asterisk Values outside of QC limits

D: 0 out of 5 outside limits ike Recovery: 0 out of 10 outside limits	•
MMENTS:	

# 3A WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab	Name:	JTC Env.	Consultants,	Inc. Cont	ract:_	HLA-52-	
Lab	Code:		Case No.: _	5 sas	No.:	SDG No	·:
Mati	rix Spi	ike - Cli	ent ID: GP	T 4-3		JTC SAMPLE NO:_	87-0343

SPIKE   ADDED	SAMPLE CONCENTRATION		MS   🔧 。	QC  LIMITS
(ug/L)	(ug/L)	(ug/L)	REC #	REC.
	**********	**********	E8722	=====
i <u>70</u>	i <u>5 u</u>	i <u>7/</u>	101	61-145
50	1 50 <u> </u>	1 <del></del>	98	71-120
50	5 v	51	102	76-127
1 50	1 5 <i>u</i>	1 <del></del>	98	76-125
50	<u> 50</u>	48	96	75 <b>–</b> 130
	ADDED   (ug/L)   70   50   50	ADDED   CONCENTRATION   (ug/L)   (ug/L)	ADDED   CONCENTRATION   CONCENTRATION   (ug/L)   (ug/L)   (ug/L)	ADDED   CONCENTRATION   CONCENTRATION   \$   (ug/L)   (ug/L)   REC #

COMPOUND	SPIKE   ADDED   (ug/L)	MSD CONCENTRATION (ug/L)	MSD REC #	 	   QC L   RPD	IMITS
			SEESES		Leesse	
1,1-Dichloroethene	70	70	10-0	1	14	61-145
Trichloroethene	50		100	2_	1 14	71-120
Benzene	50	.52-	104	-5_	i ii	76-127
Toluene	<u>50</u>	50	100	7.		76-125
Chlorobenzene	50	49	98	<u> </u>	i 13	75-130
	i <u> </u>				ii	i

Column to be used to flag recovery and RPD values with an asterisk

Values outside of QC limits

PD: _____ out of ____ outside limits

pike Recovery: ____ out of __/O__ outside limits

DMMENTS: ______

# METHOD BLANK SUMMARY

Contractor JTC Environmental Consultants, Inc. Contract No. HLA-52 Case No. 34445 Region____

muchillare chloweles 3 right 5 muchillare chloweles 3 right 5 muchillare chloweles 3 right 5 muchillare chloweles 3 right 5 muchillare chloweles 3 right 5 muchillare chloweles 3 right 5
W 7 4 W W
2 4 M W W W W W W W W W W W W W W W W W W
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
71 77 77 77 77 77 77 77 77 77 77 77 77 7
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FORM IV

7/85

Lab Name: JTC Env.	Consultants, Inc. C	ontract: HLA-52	
Lab Code:	Case No.: _3	SAS No.: SDG No	·:
Lab File ID:	0403YWBA1	Lab Sample ID:	VBLK4/3/87
Date Analyzed:	413187	Time Analyzed:	17:15
Matrix: (soil/water	NATER	Level: (low/med)	LOW
Instrument ID:	<u> </u>		
THIS METHOD B	SLANK APPLIES TO THE	FOLLOWING SAMPLES, MS 1	and MSD:

	CLIENT SAMPLE NO.	JTC   SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	1_Well#1	i 87-0249	VSPL1624	18:14
02	1 Well #2	87-0250	VSPL1625	18:58
03	1 Well #3	87-025	VSPL1626	19:56
04	1 Well #4	87-0252	VSPL1627	20:39
. 05		87-0253	VSPLIG 28	21:2
06	<u>                                     </u>			
07				
08	[			•
09	l			
10				
11				
12	l			
13				
14	<u></u>			
15				!
16		I		!
17				
18		!	1	
19		!	<u>.</u>	
201				
21	!	!	<u></u> إ	!
22 [	!			
23		!		!
24	!	!	<del>!</del> !	!
25	!.	!	!	
26  27				
2/1		!		<u></u> ¦
291	<del></del>	<del></del> }.		
47				

OMMENTS:		

Lab Name: _ JTC Env.	Consultants, Inc.	contract: HLA-52	
Lab Code:	Case No.: 4	SAS No.: SDG	No.:
Lab File ID:	0407VWBA2	Lab Sample ID:	VBLK 4/7/87
Date Analyzed:	417187	Time Analyzed:	16:36
datrix: (soil/wate:	r) WATER	Level: (low/med)	Low
Instrument ID:	<u> </u>		

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	JTC CANDLE ID	LAB	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALIZED (
01		87-0261	VSPL1629	17:2
02	1-2	81-0262	VSPL1630	18:07
03	1-2	87-0263	VSPL 1631	18:59
04	2-1	87-0268	VSPL1632	19:48
05	2-2	87-0269	VSPL1653	20:31
06	2-3	87-0270	VSPU634	21:15
07	3-1	87-0271	VSPL1635	22:02
08	3-2	87-0272	VSPL1636	22:40
09	3-3	87-0273	VSPL1637	<u> 23:22</u> 1
10	<u> </u>	87-0274		0.01
11	<u> 4-2</u>	87-0275	<u> YSPL1639</u> 1	0:39
12	!	87-0277	VSPLIGUE !	
13	<del></del> [	87-0278	- XSPL1641 !	1:55
151				
161		_ <del></del> ;		——
17				·
18				
19				i
201				i
21	i			
22				
23				
24	1			
25	I			!
26				
27	<u> </u>	!	!	
28				
29   30				
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Lab Name: JTC Env. C	consultants, Inc.	Contract: HLA-52	
Lab Code:	Case No.: 3	SAS No.: SDG No	.:
Lab File ID:	408YWBA4_	Lab Sample ID: _	VBLK
Date Analyzed:	418187	Time Analyzed:	16:54
Matrix: (soil/water)	WATER	Level: (low/med)	<u>LOW</u>
Instrument ID:	A		
THIS METHOD BL	ANK APPLIES TO TH	E FOLLOWING SAMPLES, MS A	ND MSD:

	CLIENT   SAMPLE NO.	JTC SAMPLE ID	LAB   FILE ID	TIME   ANALYZED
	SATELLE NO.	SAMPLE ID	FINE ID	MADIE D
01	ADDUBL # ( M.S.)	87-0249 MS.	VSPL1653	18:03
02	Producel # 1 MSD	87-0249 MSD	VSPL 1654	18:46
03	l1			1
04	<u> </u>		1	
05	!		<u> </u>	
06				
07	[		!	
08	!		ļ	!
09   10	<u></u>		<u> </u>	! <b></b>
11		<del></del>	<u> </u>	· · · · · ·
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13	i			¦
14				¦
15		<del></del>		
16				
17				
18				
19	<u></u>			<u> </u>
20	<del></del> !.			
21				<u> </u>
22				<del></del>
24		<del></del> :		
25	<del></del> ¦-			
26		<del></del>	<del></del>	
27				
28	i			
29				
301	i _			

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Lab Name: JTC Env.	Consultants, Inc.	Contract: HLA-52	
Lab Code:	Case No.: 4	SAS No.: SDG N	o.:
Lab File ID:	04081WBA2	Lab Sample ID:	VBLK
Date Analyzed:	418187	Time Analyzed:	4:45
Matrix: (soil/water	) WATER	Level: (low/med)	<u> LOW</u>
Instrument ID:	<u> </u>		

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	JTC	LAB	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
				~
01		87-0279	<u>VSP_1642</u>	5 22
02	<u> </u>	87-0281	<u> 7594643</u>	6:01
03	6-3	87-0282	VSPL1644	6:42
04	<u> </u>			
05	Decont	87-0283	VSPL1646	8:02
06	Decon2	87-0284	<u> </u>	8:47
07	Trip Blank	87-0285	<u> </u>	<u>9:28</u>
08   09	- 1 3 M C	<del></del>	-10.01.14.006	
10	1-3 Ms.	87-0263ms	VSPL1650	11:26
111	1-3 MSD	87-0263 ms.d	<u> </u>	12:10
12	<del></del> !			
13				
14				
15			i	
16				
17				
18		i		
19				
201				
21	1	1	[	[
22	1		[	
23	l		!	!
24]				
25	!	!·	!	!
26			!	!
27		<u></u> !,		<u></u> !
281	!.		<del></del> }	¦
29			!	<del></del> }
301				

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OMMENTS:				 
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•	VOLATILE	METHOD BLANK S	UMMARY		
Lab Name: J	TC Env. Consu	ltants, Inc. co	ntract: HLA-5	2	
Lab Code: _	Case	No.: 5 s	AS No.:	SDG No.:	
Lab File ID	: <u>0409</u>	1WBA2	Lab Sample	e ID:	1BLK
Date Analyz	ed: _4	19187	Time Analy	yzed:	10:58
Matrix: (so:	il/water) <u>\</u>	ATER	Level: (lo	w/med)	LOW
Instrument :	ID:	<u>A</u> _			
THIS !	METHOD BLANK A	APPLIES TO THE	FOLLOWING SAMPL	es, & Ms And	MSD:
	CLIENT SAMPLE NO.	JTC SAMPLE ID	LAB   FILE ID	TIME ANALYZED	-   
01 02 03	GPT6-1	87-0344 87-0344	1 V3PL1660 VSPL1661	11:46	=   _   -
03	_6PT4-3MS	87-0343 MS	1 VSPU662	1 13:17	

l	CLIENT SAMPLE NO.	JTC SAMPLE ID	LAB FILE ID	TIME     ANALYZED
01	C TOTU T	87-0343		11:46
02		01-0545	126-16-60	
		87-0344	18911881	1 3:34
03		81-0343 mS	1267663	13:17
04	GPTU-3 MSD	87-0343 MSD1	VSPL1663	13:58
05				
06		l		l[
07		I		11
180		1		1 <u></u> 1
09	[			
10				1
11		i	•	
12		i		i — i
13		i		i — i
14		- <del></del> i		ii
15		<del></del>		i —— i
16		i		i — i
17	i			ii
18	i			i ——— i
19		i		
20 j	i	i		i ———i
21 i	i	i		i ———i
22 j	<del> </del>	i:		i — i
23 i	i	i		
241				i —
25 j		i·		i
261		i-		<del></del>
27 i		i·		<del></del> i
281	<del></del> ;-	<del></del> ; -		<del></del>
29		<del></del>		i
301		i-		i

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MMENTS:		 		
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## 5A VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Tab Name:	JTC	Contract: HLA-52	
Lab Code:	Case No.:	SAS No.: SDG No.:	
Lab File ID:	G402BFBAI	BFB Injection Date: 42/87	·
Instrument ID:	_A	BFB Injection Time: 8:00	<u>o</u>
Matrix:(soil/wa	ter) WATER Level: (1	ow/med) LOW Column: (pack/cap) ?	ACK

m/e	ION ABUNDANCE CRITERIA	RELATIVE   ABUNDANCE
		=======
50	15.0 - 40.0% of mass 95	33. <i>5</i> 6
75	30.0 - 60.0% of mass 95	48.18
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	8.20
173	Less than 2.0% of mass 174	0.04 (- )1
174	Greater than 50.0% of mass 95	69.85
1 175	5.0 - 9.0% of mass 174	6.01 (8.61)11
1 176	Greater than 95.0%, but less than 101.0% of mass 174	67.49 (96.61)11
177	5.0 - 9.0% of mass 176	4.68 (6.94)21
i	1-Value is % mass 174 2-Value is % m	 ass 176

1-Value is % mass 174

ļ	Client SAMPLE NO.	JTC SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		i	BYOZ YWBAI	412187	10:08
02 j		VSTD20	0402 Y 1 A 1	4/2/87	14:03
03		VST050	0402 V2A1	41287	14:46
04		V510150	040274 AT	412187	16:42
05		VSTD200	0402 V5 A1	4287	18:18
06		VOTDIOO	0402V3A2	4/2/87	<u> 18:58</u>
07					
08	!				
09		<del></del>		!	
10			<del></del>		:
12					
13			<del></del>		
14		<del></del>	<del></del>		;
15			'		
16					i
17 j					
18	i				
19				[	
20	I				!
21	<u> </u>				!
22	\	[	l		

# 5A VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

ab Name: J	TC	Contrac	t: HLA-52	<u>-                                     </u>
Lab Code:	Case No.:	SAS No	.:	SDG No.:
Lab File ID:	0402BFBA2	В	FB Injectio	n Date: #12/87
Instrument ID:	A	В	FB Injectio	n Time: 20:20
Matrix: (soil/wa	ter) WATER Lev	el:(low/med) <u></u>	On Column	:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	38.59
75	30.0 - 60.0% of mass 95	50.06
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	8.40
173	Less than 2.0% of mass 174	0.00(-)
174	Greater than 50.0% of mass 95	65.35
175	5.0 - 9.0% of mass 174	5.58 (8.54)
176	Greater than 95.0%, but less than 101.0% of mass 174	62.95 (96.32)
177	5.0 - 9.0% of mass 176	1 <u>3.44</u> (5.47)
		ss 176

_				• -	
	Client	JTC	LAB	DATE	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
ĺ	CTT SEESELES				
01		YSTD200	0402Y5A3	4/2/87	21:56
02 j		YBLK4/28799	0402VWBA2	412187	23:43
03 i			V302 1000		
04			<del></del>		
05			<del></del>	<del></del>	
06		:			
07	<del></del> -				
08			·		
09				!	
				·!	
10	!				!
11				!	
12					
13		!			
141	[				
15	[				
16			1		
17		i		1	
18					
19				i	
20		<del></del> i	i	i	
21			<del></del> ;	i	
22 j	i			;	i

## VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Tab Name:	JTC	Contract:	HLA-52
Lab Code:	Case No.: <u>3</u>	SAS No.:	SDG No.:
Lab File ID:	0403BFBAI	BFB	Injection Date: 4 3 87
Instrument ID:	<u> </u>	BFB	Injection Time: 15:13
Matrix: (soil/wa	ter) <u>WATER</u> Level	: (low/med) Lou	Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	36.60
75	30.0 - 60.0% of mass 95	58.50
j 95	Base peak, 100% relative abundance	100·00
96	5.0 - 9.0% of mass 95	8.34
173	Less than 2.0% of mass 174	$\overline{0.00}$ ( $\overline{}$
174	Greater than 50.0% of mass 95	64.27
175	5.0 - 9.0% of mass 174	5.61 (8.73)11
176		62.09 (96.61)21
177	5.0 - 9.0% of mass 176	<u>468</u> (7.55)2

1-Value is \$ mass 174 2-Value is \$ mass 176

	Client SAMPLE NO.	JTC SAMPLE ID	IAB FILE ID	DATE ANALYZED	TIME ANALYZED
01  02  03  04  05  06  07  08  10  11  12  13  14  15	(1)011 #1 (1)011 #2 (1)011 #3 (1)011 #1 (1)011 #5		•		
18 _ 19 _ 20 _ 21 _ 22					

## 5A VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Tab Name:	JTC	Contract:	HLA-52
Lab Code:	Case No.:	4 sas no.:	SDG No.:
Lab File ID:	OHOTBEBA!	BFB	Injection Date: 417 187
Instrument ID:	<u>A</u>	BFB	Injection Time: 14:50
Matrix:(soil/wa	iter)   ATER Level	:(low/med) LO	Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	26.41
75   95	30.0 - 60.0% of mass 95  Base peak, 100% relative abundance	<u>42.59</u> 1 100.00
96   173	5.0 - 9.0% of mass 95	6.93 0.05 ( — )1
174	Greater than 50.0% of mass 95	68.20
175   176	5.0 - 9.0% of mass 174	<u>5.02 (</u> 9.36 )1    6642 (91.38 )1
177	5.0 - 9.0% of mass 176	4.80 (7.22)2
' <del></del>	1-Value is % mass 174 2-Value is % mass	iss 176

<u> </u>	Client SAMPLE NO.	JTC SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		VBLK4/7/87A		417187	15:00
02		VSTD50 VBLK-417 874	<u>040772Al</u> 204077WBA2	417181	1 15:39
04	<u> </u>	87-0261	VSPL1629	417187	17:21
05 J	1-2	87-0262	<u> </u>	4/7/87	1 <u>18:67</u> 18:59
07	2-1	87-0263 87-0268	VSP_1631 VSP_1632	4/7/87	19.48
08	2-2	87-0269	VSPLI633	4/7/87	20:31
09	<u>2-3</u>	<u>87-0270</u>   87-0271	<u> </u>	417 (87	23:02
11	3-2	87-0272	YSP-1636	4/2/81	22:44
12	3-3	87-0273   87-0274	VSPL1637	417(87)	23:22
14	4-2	87-0274 81-0275	<u> </u>	418181	0:39
15	5-1	87-0277	VSPL 1640	4 8 87	1:18
16  17	<u> </u>	87-0278	<u> </u>	418187	_1:55_
18					
19  20	<u> </u>			¦	
21					
22 J	[				

## 5A

# VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Tab Na	ne:	Contract: HLA
rap Co	de: Case No.:	SAS No.: SDG No.:
Lab Fi	Le ID: <u>DHORBEBAL</u>	BFB Injection Date: 4/8/87
Instru	ment ID:A	BFB Injection Time: 2:41
Matrix	(soil/water) WATER Level:(10	w/med) LOW Column: (pack/cap) PACK
m/e	ION ABUNDANCE CRITERIA	
50	15.0 - 40.0% of mass 95	31.23 •
75     95	30.0 - 60.0% of mass 95 Base peak, 100% relative abu	47.16 ndance   100.06
96     173	5.0 - 9.0% of mass 95	$\begin{array}{c c} & & & & & & \\ \hline & & & & & \\ \hline & & & & \\ \hline & & & &$
174   175	Greater than 50.0% of mass 9 5.0 - 9.0% of mass 174	
176	Greater than 95.0%, but less	than 101.0% of mass 174 58.11 (97.67)1

1-Value is & mass 174

2-Value is % mass 176

	Client SAMPLE NO.	JTC SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME   ANALYZED
01 02 03 04 05 06 07	5-3 6-2 6-3	VSTD50 VBLY VBLY 41 8 87 87-0214 87-0281 87-0282	040875#1 040878#8 040878#8 758578#3 75857844	ANALYZED   4/8/87   4/8/87   4/8/87   4/8/87   4/8/87   4/8/87	2:59 3:42 4:45 5:22 6:01 6:42
09   10   11	Decon 1  Decon 2  Trip Brank	81-0382 81-0384 81-0383	75651646 75651647 75651648	4/8/81 4/8/87	8:02 8:47 9:28
12   13   14   15	1-3 MS 1-3 MSD	87-0263MS 87-0263MSD MS Blank	VSPL1650 VSPL1651 VSPL1652	4 8 87 4 8 87 4 8 87	11:26 12:10 12:50
16  17  18  19					
20  21  22					

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# VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Tab Na	me: JTC Contr	ract: HLA-52
Lab Co	de: Case No.: 3 SAS	No.: SDG No.:
Lab Fi	le ID: <u>OHOSBFBA2</u>	BFB Injection Date: 4/8/87
Instru	ment ID: A	BFB Injection Time: 13:41
Matrix	:(soil/water) WATER Level:(low/med)	LOW Column: (pack/cap) PACK
d I		% RELATIVE
m/e	ION ABUNDANCE CRITERIA	ABUNDANCE
=====		
50	15.0 - 40.0% of mass 95	<u> </u>
	30.0 - 60.0% of mass 95	<u> </u>
	Base peak, 100% relative abundance	
96		<u> </u>
	Less than 2.0% of mass 174	$\underline{\underline{0.\infty}(-)1}$
	Greater than 50.0% of mass 95	I <u></u> 66.14I
	5.0 - 9.0% of mass 174	<u> </u>
176	Greater than 95.0%, but less than	
177	5.0 - 9.0% of mass 176	<u> </u>
I	1-Value is % mass 174	2-Value is % mass 176

	Client SAMPLE NO.	JTC SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01   02   03		VBLK V VSTDSO VBLK WIFIX	0408VWBA3 0408VZBZ 0408VWBAU	4 8 87 4 8 87 4 8 87	15:20 16:01 16:54
04   05   06	05W 1#11871	81-0244MSD	V5PC1653 V5PC1654	4(8(87 4(8)87	1846 18.03
07   08   09   10					
11  12  13					
14  15  16  17					
17  18  19  20					
21					

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## 5A VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ITC Env. Consultants, Inc.			Contract: HLA-52			
Lab Code:	Case No.:	_5_	SAS No.:	SDG No.:		
Lab File ID:	<u>O409BFBAI</u>		BFB	Injection Date: 419187		
Instrument ID:	A		BFB	Injection Time: 7:55		
Matrix: (soil/wa	ter) WATER Lev	el:(lov	v/med)   (\	) Column: (pack/cap) PA(Y		

1		RELATIVE
m/e	ION ABUNDANCE CRITERIA	<b>ABUNDANCE</b>
====		E=====================================
50	15.0 - 40.0% of mass 95	31.80
75	30.0 - 60.0% of mass 95	46.51
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of mass 95	8.29
173	Less than 2.0% of mass 174	0.00 (0.00)1
174	Greater than 50.0% of mass 95	63.88
175	5.0 - 9.0% of mass 174	4.75 (7.44)1
176	Greater than 95.0%, but less than 101.0% of mass 174	62.35 (97.61)11
177	5.0 - 9.0% of mass 176	1 <u>4.40 (7.06)21</u>
l		1
	1-Value is % mass 174 2-Value is % m	ass 176

	Client SAMPLE NO.	JTC SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	GPT 6-1 GPT 4-345	VOA BLANK VSTD 50 VOA BLANK 87-0343 87-0344 87-0343 MS	0409VWBA 1 10409V2A 1 10409 YWBA 2 VSPL 1660 VSPL 1661 VSPL 1662	04/09/87 04/09/87 04/09/87 04/09/87 04/09/87 04/09/87	9:17 10:05 10:58 11:46 12:29 13:17
07   08   09   10   11	<u> </u>	97-034 7 MSD	VSPL1663	<u>. 14 109 197</u>	13:58
12  13  14  15  16					
17  18  19  20  21  22					

## INITIAL CALIBRATION DATA - VOLATILE HSL COMPOUNDS

CASE NO:
LABORATORY JTC
CONTRACT NO
LABORATORY CALIBRATION DATE: 04/02/B7

_ABORATORY ID:	0402V1	1 0402V2£	0402V3A	2 0402V4A	0402V5	73	
COMPOUND	RF20	RF50	RF100	RF150	RF200	AVE RRF	%RSD
COMPOUND  CHLOROMETHANE BROMOMETHANE UNYL CHLORIDE CHLOROETHANE METHYLENE CHLORIDE ACETON ACRYLONITRILE CARBON DISULFIDE TRICHLOROETHANE 1,1-DICHLOROETHANE 1,1-DICHLOROETHANE TRANS-1,2-DICHLOROETHANE TRANS-1,2-DICHLOROETHANE CHLOROFTHANE 1,1-TRICHLOROETHANE CARBON TETRACHLORIDE BROMODICHLOROMETHANE CARBON TETRACHLOROPROPENE TRACHLOROETHANE 1,2-DICHLOROPROPENE TRACHLOROETHANE CIS-1,3-DICHLOROPROPENE TRICHLOROETHYLENE DIBROMOCHLOROMETHANE CIS-1,3-DICHLOROPROPENE 1,1,2-TRICHLOROPROPENE 2-CHLOROETHYLENE CIS-1,3-DICHLOROPROPENE 1,1,2-TETRACHLOROETHANE CIS-1,3-DICHLOROPROPENE 1,1,2,2-TETRACHLOROETHANE TCHLOROBENZENE TCHLOROBENZENE TTYRENE XYLENES	70552050702005055522225 518552050702200555522225 5577309160698552505457730277027702705522225 0000000041031320000100000010000001010	331211174464792212124657618372090234315 669407131516609054817745353246573880504 0000000511313100000100000100000001010	433344083714074452928153703489847815249 43074514252423933502209424940249618525 558346144550549804379463434123545389495 000001000041131210000000000000010000000000	7446698783944027425422442028404613194245516583781485054890437166453422365638059600000000000000000000000000000000000	13251938584417603151205298086330267484 5473551424943780436066342440377484304 0000100041031210000100000100000000000000	62569935132621189676948955766977582949 5583671330237975358686611550775210743999 558387147505499043706645355223657380495 558387147500001000000000000000000000000000000	111992159B37476651B009B94649236096773BB

RF - RELATIVE RESPONSE FACTOR
AVE RRF - AVERAGE RELATIVE RESPONSE FACTOR
%RSD - PERCENT RELATIVE STANDARD DEVIATION
# - CCC - CALIBRATION CHECK COMPOUNDS
#* - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS
MINIMUM AVE RRF FOR SPCC IS 0 300
MAXIMUM %RSD FOR CCC IS 30%

STANDARD DATE: 04/03/87 TIME: 16:32.00 STANDARD ID: 0403V2A1 CALIBRATION DATE: 04/02/87 CASE NO: #3
LABORATORY ID: JTC
CONTRACT NO: -INSTRUMENT ID: VOA1
- SENSITIVITY ID: 0403BFBA

# * MAXIMUM %D FOR CCC IS 25% ** MINIMUM AVE RRF FOR SPCC IS 0.300

COMPOUND AVE RRF RF50	٧D
CHLOROMETHANE BROMOMETHANE BROMOMETHANE O. 562 O. 526 VINYL CHLORIDE CHLOROBETHANE O. 366 O. 319 METHYLENE CHLORIDE ACROLEIN ACRYLDNITRILE CARBON DISULFIDE TICHLOROFLYNENE O. 313 O. 025 ACRYLDNITRILE CARBON DISULFIDE TICHLOROFLYNENE O. 324 O. 562 O. 526 O. 526 O. 526 O. 526 O. 526 O. 526 O. 527 O. 527 O. 515 O. 578 O. 579 O. 515 O. 578 CARBON O. 500 O. 578 CARBON DISULFIDE TICHLOROFLYVLENE O. 470 O. 435 O. 578 CARBON DISULFIDE TICHLOROFLYVLENE O. 523 O. 578 TRANS-1, 2-DICHLOROETHANE O. 576 TRANS-1, 2-DICHLOROETHYLENE O. 576 TRANS-1, 2-DICHLOROETHANE O. 576 O. 586 TRANS-1, 2-DICHLOROETHANE O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 038 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O. 039 O	**************************************

AVERAGE %D FOR CCC IS: -2.4

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION RF - RESPONSE FACTOR FROM DAILY CALIBRATION %D - PERCENT DIFFERENCE ++ - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS + - CCC - CALIBRATION CHECK COMPOUNDS

CASE NO: --LABORATORY ID: JTC
CONTRACT NO. --INSTRUMENT ID: VOA1
ENSITIVITY ID: 0407BFBA

STANDARD DATE: 04/07/87 TIME: 15:39:00 STANDARD ID: 0407V2A1 CALIBRATION DATE: 04/02/87

* MAXIMUM %D FOR CCC IS 25% ** MINIMUM AVE RRF FOR SPCC IS 0.300

COMPOUND	AVE RRF	RF50	%D
COMPOUND  CHLOROMETHANE BROMOMETHANE VINYL CHLORIDE CHLORIDE CHLORIDE CHLORIDE METHYLENE ACETONE ACETONE ACETONE ACRYLONITRILE CARBON DISULFIDE TRICHLOROETHANE 1,1-DICHLOROETHANE 1,1-DICHLOROETHANE TRANS-1,2-DICHLOROETHANE CHLOROFORM 1,2-DICHLOROETHANE CHLOROFORM 1,1,1-TRICHLOROETHANE CARBON TETRACHLORIDE BROMODICHLOROMETHANE VINYL ACETATE 1,2-DICHLOROPROPENE TRICHLOROETHYLENE DIBROMOCHLOROMETHANE CIS-I,3-DICHLOROPROPENE TRICHLOROETHYL VINYL ETHER "-CHLOROETHYL VINYL ETHER "TROMOFORM 4-METHYL-2-PENT ANONE 1,1,2,2-TETRACHLOROETHANE TOLUENE CHLOROBENZENE STYRENE XYLENES	625699351326211896769489557669775829495583871475054997066645355223657380495557000000000000000000000000000000000	000010003103121000000000001000000000000	## # # # # # # # # # # # # # # # # # #

AVERAGE %D FOR CCC IS: 4.6

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION RF - RESPONSE FACTOR FROM DAILY CALIBRATION %D - PERCENT DIFFERENCE ** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS * - CCC - CALIBRATION CHECK COMPOUNDS

CASE NO: STANDARD DATE: 04/08/87

LABORATORY ID: JTC TIME: 2:59:00

CONTRACT NO: BA-27 STANDARD ID: 0408V2A1
INSTRUMENT ID: VOA1 CALIBRATION DATE: 04/02/87

SENSITIVITY ID: 0408BFBA

* MAXIMUM XD FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.300

COMPOUND	AVE RRF	RF50	%D
CHLOROMETHANE	0. 576	0. 499	13 **
BROMOMETHANE	0. 562	0. 581	-2
VINYL CHLORIDE	0.815	0. 803	2 *
CHLOROETHANE	0. 366	0. 538	-46
METHYLENE CHLORIDE	1.809	1. 142	37
ACETONE	0. 719	0. 400	44
ACROLEIN	0. 133	0. 040	70
ACRYLONITRILE	0. 435	0. 543	-24
CARBON DISULFIDE	4. 701	4. 079	13
TRICHLOROFLUOROMETHANE	1. 523	1.306	14
1,1-DICHLOROETHYLENE	1.032	0. 959	7 *
1.1-DICHLOROETHANE	3. 576	3. 840	-6 **
TRANS-1, 2-DICHLORDETHYLENE	1. 492	1. 516	-1
CHLOROFORM	2. 971	<b>3</b> . <b>2</b> 72	-9 *
1,2-DICHLOROETHANE	1. 951	<b>2</b> . <b>0</b> 20	-2
2-BUTANONE	0. 038	0. 035	8
1, 1, 1-TRICHLORGETHANE	0. 459	0. 443	4
CARBON TETRACHLORIDE	0. 386	0. 347	10
BROMODICHLOROMETHANE	0. 767	0. 724	6
VINYL ACETATE	1.086	1. 034	<b>5</b> •
1.2-DICHLOROPROPANE	0. 669	0. <b>6</b> 68	0 #
TRANS-1.3-DICHLOROPROPENE	0. 664	0. 632	5
TRICHLORDETHYLENE	0. 418	0. 384	8
DIBROMOCHLOROMETHANE	0. 519	0. 472	9
1, 1, 2-TRICHLOROETHANE	0. 355	0. 353	1
CIS-1, 3-DICHLOROPROPENE	0. 505	0. 511	0
BENZENE	1. 277	1. 297	-1
2-CHLOROETHYL VINYL ETHER	0. 276	0. 267	3
BROMOFORM	0. 356	0. 289	19 **
4-METHYL-2-PENTANONE	0. 629	0. 587	7
2-HEXANONE	0. 517	0. 502	3
1, 1, 2, 2-TETRACHLOROETHANE	0. 707	0. 673	5 **
TETRACHLOROETHYLENE	0. 375	0. 356	5
TOLUENE	0. 848	0. 871	-4 +
CHLOROBENZENE	1.032	1.011	2 **
ETHYLBENZENE	0. 499	0. 500	0 *
STYRENE	0. 994	0. 997	0
XYLENES	0. 599	0. 606	U

AVERAGE %D FOR CCC IS: -0.6

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

**%D - PERCENT DIFFERENCE** 

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

CASE NO. --- STANDARD DATE: 04/08/87

LABORATORY ID: JTC TIME: 16:01:00

CONTRACT NO: HLA-52 #4 STANDARD ID: 040BV2A2

INSTRUMENT ID: VOA1 CALIBRATION DATE: 04/02/87

SENSITIVITY ID: 0408BFBA

* MAXIMUM %D FOR CCC IS 25%

** MINIMUM AVE RRF FOR SPCC IS 0.300

COMPOUND	AVE RRF	RF50	۷D
CHLOROMETHANE	0. 576	0. 476	17 **
BROMOMETHANE	0. 562	0. 567	0
VINYL CHLORIDE"	0.815	O. 800	2 *
CHLORDETHANE	0. 366	0. 554	-50
METHYLENE CHLORIDE	1.809	1. 199	34
ACETONE	0.719	0. 251	65
ACROLEIN	0. 133	0. 034	74
ACRYLONITRILE	0. 435	0. 450	-2
CARBON DISULFIDE	4. 701	4. 141	12
TRICHLOROFLUOROMETHANE	1. 523	1. 159	24
1,1-DICHLOROETHYLENE	1.032	0. <del>9</del> 84	5 *
1.1-DICHLOROETHANE	3. 576	<b>3</b> . <b>8</b> 76	-7 **
TRANS-1, 2-DICHLOROETHYLENE	1. 492	1. <b>5</b> 55	-3
HLOROFORM	2. 971	3. 191	-6 *
1,2-DICHLORGETHANE	1. 951	1. 791	8 .
2-BUTANONE	0. 038	0.021	45
1,1,1-TRICHLOROETHANE	0. 459	0. 390	15
CARBON TETRACHLORIDE	0. 386	0. 299	23
BROMODICHLOROMETHANE	0. 767	0. 637	17
VINYL ACETATE	1.086	0.840	23
1,2-DICHLOROPROPANE	0. 669	0. 640	4 *
TRANS-1, 3-DICHLOROPROPENE	0. 664	0. 575	13
TRICHLOROETHYLENE	0.418	0. 376	10
DIBROMOCHLOROMETHANE	0.519	0. 423	19
1, 1, 2-TRICHLOROETHANE	0. 355	<b>0</b> . <b>3</b> 20	10
CIS-1,3-DICHLOROPROPENE	0. 505	0. 456	10
BENZENE	1. 277	1. 257	2
2-CHLOROETHYL VINYL ETHER	0. 276	0. 229	17
BROMOFORM	0. 356	0. 256	28 **
4-METHYL-2-PENTANONE	0. 629	0. 457	27
2-HEXANONE	0. 517	0. 293	43
1, 1, 2, 2-TETRACHLOROETHANE	0. 707	0. 584	17 **
TETRACHLOROETHYLENE	0. 375	0. 362	4
TOLUENE	O. 848	0. 882	-3 *
CHLOROBENZENE	1.032	0. 998	3 **
ETHYLBENZENE	0. 499	0. 495	1 *
STYRENE	0. 994	0. 963	3
XYLENES	0. 5 <del>9</del> 9	0. 594	1

AVERAGE %D FOR CCC IS: 0.5

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION

RF - RESPONSE FACTOR FROM DAILY CALIBRATION

%D - PERCENT DIFFERENCE

** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS

* - CCC - CALIBRATION CHECK COMPOUNDS

CASE ND: --'.ABORATORY ID: JTC
ONTRACT ND: NF-12 #564
ANSTRUMENT ID: VOA1
SENSITIVITY ID: 0409BFBA

STANDARD DATE: 04/09/87 TIME: 10:05:00 STANDARD ID: 0409V2A1 CALIBRATION DATE: 04/02/87

# # MAXIMUM %D FOR CCC IS 25% ## MINIMUM AVE RRF FOR SPCC IS 0.300

AVERAGE %D FOR CCC IS: -0.6

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION RF - RESPONSE FACTOR FROM DAILY CALIBRATION %D - PERCENT DIFFERENCE ++ - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS + - CCC - CALIBRATION CHECK COMPOUNDS

LASE NO: --LABORATORY ID: JTC
CONTRACT NO: --INSTRUMENT ID: VOA1
SENSITIVITY ID: 0407BFBA

STANDARD DATE: 04/07/87 TIME: 15:39:00 STANDARD ID: 0407V2A1 CALIBRATION DATE: 04/02/87

* MAXIMUM %D FDR CCC IS 25% ** MINIMUM AVE RRF FDR SPCC IS 0.300

COMPOUND	AVE RRF	RF50	۷D
COMPOUND  CHLOROMETHANE BROMOMETHANE BROMOMETHANE VINYL CHLORIDE CHLOROETHANE METHYLENE CHLORIDE ACETONE ACROLEIN ACRYLONITRILE CARBON DISULFIDE TRICHLOROFLUOROMETHANE 1,1-DICHLOROETHYLENE 1,1-DICHLOROETHANE TRANS-1,2-DICHLOROETHANE CHLOROFORM 1,2-DICHLOROETHANE 2-BUTANONE 1,1,1-TRICHLOROETHANE CARBON TETRACHLORIDE BROMODICHLOROMETHANE VINYL ACETATE 1,2-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRICHLOROETHYLENE DIBROMOCHLOROMETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROPROPENE BENZENE 2-CHLOROETHYL VINYL ETHER BROMOFORM 4-METHYL-2-PENTANONE 1,1,2,2-TETRACHLOROETHANE 1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHYLENE TOLUENE CHLOROBENZENE ETHYLBENZENE STYRENE XYLENES	0.5583699335132621189676948955766977582949 625699335132621189676948955766977582949 9999	0.470744900769007407280408431400862797721 85007449007690074072804908799394897721	* * * * * * * * * * * * * * * * * * *

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AVERAGE %D FOR CCC IS:

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION RF - RESPONSE FACTOR FROM DAILY CALIBRATION %D - PERCENT DIFFERENCE ** - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS * - CCC -- CALIBRATION CHECK COMPOUNDS

CASE NO: --LABORATORY ID. JTC
CONTRACT NO: HLA-52 #4
INSTRUMENT ID: VOA1
SENSITIVITY ID: 0408BFBA

STANDARD DATE: 04/08/87 TIME: 2:59:00 STANDARD ID: 0408V2A1 CALIBRATION DATE: 04/02/87

* MAXIMUM %D FOR CCC IS 25% ** MINIMUM AVE RRF FOR SPCC IS 0.300

COMPOUND	AVE RRF	RF50	٧D
COMPOUND  CHLDROMETHANE BROMOMETHANE VINYL CHLORIDE CHLOROETHANE METHYLENE CHLORIDE ACETONE ACETONE ACROLEIN ACRYLONITRILE CARBON DISULFIDE TRICHLOROFLUOROMETHANE 1,1-DICHLOROETHYLENE 1,1-DICHLOROETHANE TRANS-1,2-DICHLOROETHYLENE CHLOROFORM 1,2-DICHLOROETHANE 2-BUTANONE 1,1,1-TRICHLOROETHANE CARBON TETRACHLORIDE BROMODICHLOROMETHANE VINYL ACETATE 1,2-DICHLOROPROPANE TRANS-1,3-DICHLOROPROPENE TRANS-1,3-DICHLOROPROPENE TRICHLOROETHYLENE DIBROMOCHLOROMETHANE 1,1,2-TRICHLOROETHANE CIS-1,3-DICHLOROPROPENE BENZENE 2-CHLOROETHYL VINYL ETHER BROMOFORM 4-METHYL-2-PENTANONE 1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHYLENE TOLUENE CHLOROBENZENE ETHYLBENZENE STYRENE XYLENES	00.0001.0004.11.31.21.0000.1000001.000.0000000000000	9913820039690620537444824231779723611076 95853400398512005374448342317799723611076 900011000411031320000100000010000001000	

AVERAGE %D FOR CCC IS: -0.6

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION RF - RESPONSE FACTOR FROM DAILY CALIBRATION %D - PERCENT DIFFERENCE ++ - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS + - CCC -- CALIBRATION CHECK COMPOUNDS

CASE NO: --'ABORATORY ID: JTC
ONTRACT NO.
'NSTRUMENT ID: VOA1
SENSITIVITY ID: 0409BFBA

STANDARD DATE: 04/09/87 TIME: 10:05:00 STANDARD ID: 0409V2A1 CALIBRATION DATE: 04/02/87

MAXIMUM %D FOR CCC IS 25% MINIMUM AVE RRF FOR SPCC IS 0.300

COMPOUND	AVE RRF	RF50	%D
COMPOUND  CHLOROMETHANE BROMOMETHANE VINYL CHLORIDE CHLOROETHANE METHYLENE CHLORIDE ACETONE ACETONE ACCROLEIN ACRYLONITRILE CARBON DISULFIDE TRICHLOROFLUOROMETHANE 1,1-DICHLOROETHYLENE 1,1-DICHLOROETHANE 1,1-DICHLOROETHANE 1,2-DICHLOROETHANE CHLOROFORM 1,2-DICHLOROETHANE 2-BUTANDNE 1,1,1-TRICHLOROETHANE CARBON TETRACHLORIDE BROMODICHLOROMETHANE VINYL ACETATE 1,2-DICHLOROPROPANE TRANS-1,3-DICHLOROPROPENE TRICHLOROETHYLENE DIBROMOCHLOROMETHANE 1,1,2-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE SENZENE 2-CHLOROETHYL VINYL ETHER BROMOFORM 4-METHYL-2-PENTANDNE 2-HEXANONE 1,1,2,2-TETRACHLOROETHANE TETRACHLOROETHYLENE TOLUENE CHLOROBENZENE ETHYLBENZENE STYRENE XYLENES	00.00.1.31.21.00.00.00.00.00.00.00.00.00.00.00.00.00	788537500398097826207152018555596864416 457535050298528043796634350057344692080 0.0001.00041.03131.000000000001.0000001.000	42261386818302069

AVERAGE %D FOR CCC IS: -0.6

AVE RRF - AVERAGE RESPONSE FACTOR FROM INITIAL CALIBRATION RF - RESPONSE FACTOR FROM DAILY CALIBRATION %D - PERCENT DIFFERENCE ## - SPCC - SYSTEM PERFORMANCE CHECK COMPOUNDS # - CCC - CALIBRATION CHECK COMPOUNDS

## PESTICIDES/PCBS

# 2E WATER PESTICIDE SURROGATE RECOVERY

Lab	Name: JTC	ENVIRONMENTAL	Contract: HLA	_
_ab	Code:	Case No.: 45	SAS No.:	SDG No.:

1			
	EPA	Sl	OTHER
	SAMPLE NO.	(DBC) #	
- (			
01	87-0277	<u>50</u>	i!
02	87-0278	1 <u>47</u>	l
03	87-0279	74	
04	57-028 3	145	lI
05	97-0284	123	
06	METHOD BLANK	115	lI
07			lI
08		l	[
09			
10		' <u> </u>	
11		ll	I
12		ll	1
13		i	I
14		1	!
15			1
16			1
17	[		i
18		!	!
19			!
20			
21			
22		1	ا
23		I	
24		1	
25	[	[	1
26		!	
27 J		I	
28		1	
29		1	1
30			

ADVISORY QC LIMITS

S1 (DBC) = Dibutylchlorendate (24-154)

- # Column used to flag recovery values
- * Values outside of QC limits
- D Surrogates diluted out

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page	ρf	

# 3E WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: <u>J7C ENV</u> :	IRONM ENTAL	Contract: HLA	·
Lab Code:	Case No.: 45	SAS No.:	SDG No.:
Matrix Spike - EPA	Sample No.: Mit!	idSpre/spine Dug	i ate

	SPIKE	SAMPLE	MS	MS	QC
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS
COMPOUND	(ug/L)	(ug/L)	(ug/L)	REC #	REC.
					======
Lindane	,2		,2207	110	56-123
Heptachlor	·2		1 ,2179	110	40-131
Aldrin	. 2		.2185	1 109	40-120
Dieldrin	.5		.4792	96	52-126
Endrin	.5		4930	99	56-121
4,4' DDT	-5		. 6025	120	38-127
					اا

SPIKE   ADDED	MSD  CONCENTRATION   (NG/L)	MSD   <b>%</b>   PFC #	'\$   '\$	•	IMITS
(49/1)	(ug/ L)	REC P			
.2	1487	74	39±	15	56-12
<u> </u>		194	5	20	40-13
<u> </u>			4	22	40-12
ii			15	18	52-12
ii		78	23*	21	56-12
ii		106	13	27	38-12
	(ug/L)	(ug/L) (ug/L)	(ug/L) (ug/L) REC #    .2	(ug/L) (ug/L) REC # RPD #    .2	(ug/L) (ug/L) REC # RPD # RPD    .2

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: 2 out of 6 outside limits spike Recovery: 0 out of 2 outside limits

COMMENTS: % RPD limits are advisory only and are not to be used to determine if a sample should be reanalyzed.

EPA CLP SOW section E-PEST Page 49

^{*} Values outside of QC limits

# 4C PESTICIDE METHOD BLANK SUMMARY

PESTICIDE METHOD BLANK SUMMARY	
.ab Name: TTC ENVIRONMENTAL Contract: HLA-SZ	
Code: Case No.: #4 SAS No.: SDG No.:	
ab Sample ID: METHOD BLANK Lab File ID:	
atrix: (soil/water) WATER Level: (low/med) Low	
ate Extracted: 05/07/87 Extraction: (SepF/Cont/Sonc) CONT	
ate Analyzed (1): 05/12/87 Date Analyzed (2): 05/13/87	
ime Analyzed (1): 13:05 Time Analyzed (2): 8:43	
nstrument ID (1): <u>E PE 2000</u> Instrument ID (2): <u>D VARIAN</u>	32 <i>0</i> 0
C Column ID (1): 1.5% 0v-17/1.95% 0v-210 GC Column ID (2): 0v-101	
THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:	
EPA   LAB   DATE   DATE   SAMPLE NO.   SAMPLE ID   ANALYZED 1   ANALYZED 2	
01 Method Spike 5/12/87	
02   Method Spike O.D S/12/87	
03	
04   <u>    87-0278   3/12/87                                     </u>	
06	

	L EFA	משת	DAIL	l purr
	SAMPLE NO.	SAMPLE ID	ANALYZED 1	ANALYZED 2
	*========	=======================================	========	=======
01	l <u></u>	Method Spike	5/12/87	l <u></u>
02		Method Soke Que		<u> </u>
03		87-0277	5/12/87	l <u></u>
04		87-0278	5/12/87	
05		87-0279	5/12/87	
06		87-0283	5/12/87	<u> </u>
07		87-0284	5/12/87	<u> </u>
08				<u> </u>
09				<u></u>
10				
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OMMENTS:		_	 	 	
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# METHOD BLANK SUMMARY

Contractor JTC Environmental Consultants, Inc. Contract No. Case No. 4.5

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5																			_		
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1	2//			_												_				_	
FILE 10																					
FILI	ہے																				:
ò	Blos	187																			
SAMPLE NO. FI	Hay	21																			٤
BAM	Pest								}						ı						



# 8D PESTICIDE EVALUATION STANDARDS SUMMARY

Lab	Name: JTC ENU:	EROHMEN	TAC	Contract: HL	4
1	Code:	Case No.:	4	SAS No.:	SDG No.:
Inst	trument ID: <u>E FE</u>	2000		GC Column ID:	1.5% OV-17/1.95% OU-210
Date	es of Analyses:	6/11/87	to	5/14/87	

# Evaluation Check for Linearity

PESTICIDE	CALIBRATION   FACTOR	CALIBRATION FACTOR	CALIBRATION FACTOR	%RSD .	 
	EVAL MIX A	EVAL MIX B	EVAL MIX C	10.0%)	
	=========	_==============	#F###################################	=====	
ALDRIN	168 543700		71824228	1 <u>2.54</u> 1	
ENDRIN	158175375	57596890	5837860 <i>2</i>	0.70	
4,4'-DDT	8135750	18006810	26319038	52.2	(1)
DBC	4/120790	3 <i>85</i> 29016	40060101	3 <i>.20</i>	
i					

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve.

# Evaluation Check for 4,4'-DDT/Endrin Breakdown (percent breakdown expressed as total degradation)

ļ	-	DATE	TIME	ENDRIN	4,4'-DDT	COMBINED
		ANALYZED	ANALYZED	ł		(2)
		=========	*********		#===###	=======
1	INITIAL	1				
01	EVAL MIX B	105/11/87	13:14	1	<b> </b>	8,2
02	EVAL MIX B	05/12/87	+515162	<del></del>	l	
03	EVAL MIX B	l				
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					<del></del>
07	EVAL MIX B					<del>  </del>
08	EVAL MIX B	i				
09	EVAL MIX B	i i	· ———			
10	EVAL MIX B					
11	EVAL MIX B	i				
12	EVAL MIX B	i				
13	EVAL MIX B					
14	EVAL MIX B					
i			i	i		

(2) See Form instructions.

# 9 PESTICIDE/PCB STANDARDS SUMMARY

-ab Name: JTC ENVIRONMENTAL Contract: HLA-53									
Lab Code:	с	ase No.	: _4.	_ SAS No.:		SDG No.: _		_	
Instrument ID: <u>F PF 2000</u> " GC Column ID: <u>15% 6v -77/195% 0v-2/0</u>									
	DATE (	S) OF	FROM: 5/	11/87_	DATE .	OF ANALYSIS	5/14/	187	
	ANALY	SIS	TO: 5/	14/87	TIME (	OF ANALYSIS	1:1		
	TIME(		FROM: /3		LAB S	AMPLE ID TUI	>B		
	ANALY	SIS	TO: /	: 18	(STAN	DARD)			
COMPOUND	RT	1 .	RT	CALIBRATION		CALIBRATION	IONT	<b>%</b> D	
i .	i	•	NDOW	FACTOR			Y/N		
i	i	FROM	I TO		i		i -/ -	i	
		=====					===	,   =====	
alpha-BHC	i <i>1:53</i>	11.51	i 1.55	27520900	1.54	28643800	iΥ	4.0	
beta-BHC	2.30	228	2.32	2294/600	2.32	20992700	i <del> y</del>	8.9	
delta-BHC	2.20	2.67	12.73	14028550	2.71	15963400	ĺУ	12.9	
gamma-BHC	1.96	1.94	1.98	110225400	i		i —	i ———	
Heptaclor	2.42	2.39	2.45	25756650	i — —		i	<u> </u>	
Aldrin	2.95	2-85	3-05	24486500	2.98	50228700	I N	105	
Hept. Epoxide		4.51	14.63	19832300	j ——		i —		
Endosulfan I	5.80	5.74	5.86	20227450	<u> </u>	•	i —		
Dieldrin / T	7.14	7.06	7.22	22.337750-					
4,4'-DDE	7.03	7.02	7.04	18882900	7.05	2026700	i <u>Z</u>	7.1	
[Fndrin	8.82	8.81	883.	16026410	8.88	15644250	I	2.41	
dosulfan II	16:92	10.80	11.04	25775275					
!4,4'-DDD .	11.08	11.06	11.10	26096100	11.02	23095250	区	<u> </u>	
Endo.Sulfate.	:13.47	1.13.45	13,49	-18297500	<u> </u>	•	l		
4,4'-DDT	15.58	13.56	13.60	6941050			l <u> </u>		
Methoxychlor_	20.22	19.94	20.50	. 16875	i <u> </u>		اا		
Endrin Ketone			! <u> </u>		<u> </u>		اا		
a. Chlordane_	5.66	5-64	5.68	16060150			1		
<pre>[g. Chlordane_]</pre>	<u> </u>		l	·			1		
Toxaphene	7.26	7.13	7.38 I	2009953			!		
Aroclor-1016_	2.46	2.41	<u> 251</u>	1006538			1		
Aroclor-1221	1.44	138	1.50	10/8/22			I		
Aroclor-1232	7.44	2.42	2.46	545374			\		
Aroclor-1242	401	3.93	4.08	35/40/ i	!		!		
Aroclor-1248	5.62	5.61	5,73	2942175	1		i		
Aroclor-1254	13,12	12.79	13.45	1776248	!		!	!	
Aroclor-1260_	<u>8.83</u>	8.68	8.98	1053768	!	!	<u>!</u>	!	

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. *D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D.

It iffication of such analytes is based primarily on pattern recognition

page __ of __

# 9 PESTICIDE/PCB STANDARDS SUMMARY

•	The Name: TTC ENVIRONMENTAL Contract: HLA-53								
1	Lab Code: Case No.: SAS No.: SDG No.:								
:	Instrument ID: <u>F PF 2000</u> " - GC · Column ID: <u>15% 0v-77/195</u> % 0v-2/0								
	DATE(S) OF FROM: 5/11/87   DATE OF ANALYSIS 5/14/87								1/87
		ANALY			14/87		OF ANALYSIS	00	3 ن.
		TIME (		FROM: /3			AMPLE ID IN	ZA_	
		ANALY:	SIS	TO:/	:18	(STANI 	DARD)		
	COMPOUND	RT	1	RT	CALIBRATION	RT	CALIBRATION	IONT	₹D
	•	i		NDOW	FACTOR	ĺ		Y/N	
		i	FROM	TO			İ	i	İ
	*****		=====			***************************************			=====
	alpha-BHC	1.53	1.51	1.55	27520900	İ	Ī	j	İ
	beta-BHC	2.30	228	2.32	2294/600			i = 1	
	delta-BHC	2.20	2.67	12.73	14028550			$\subseteq$	
	gamma-BHC	1.96	1.94	1.98	110225400	1.97	35595300	I	102
	Heptaclor	2.42	2.39	2.45	25756650	2,46	23963150	1 <u></u>	7.2
	Aldrin	2.95	2-85	3-05	24486500	2.98	21049700	1	15.0
- {	Hept. Epoxide	4.57	451	4.63	19832300	4:60	21528450	I <u>Y</u>	8.2
- 1	Endosulfan I_	5,80	5.74	5.86	20.227450	5.86	19133250	<u></u>	5,6
-	Dieldrin 🔻 : 🛅	7.14	7.06	7.22	22.337750-	·-7·22	24684500	ا <u>ــــــــــــــــــــــــــــــــــــ</u>	9.5
	4,4'-DDE	703	7.02	7.04	18882500			ll	
1	Endrin	8.82	8.81	<u>883.</u>	160264100	·	·	l	
	dosulfan II	16.92	10.80	11.04	25775275	10.90	24745225	<u>                                     </u>	40
1	4,4'-DDD	11.08	11.06	11.10	26096100				·
ļ	Endo.Sulfate.		13.45	13,49	18297500	<u> </u>	•	ا ــــــــــــــــــــــــــــــــــــ	
-	4,4'-DDT	15.58	13.56	13.60	6941050		6263200	<u> </u>	16.3
ļ	Methoxychlor_	20.22	19.94	20.50	16875	20.35	19150	<u>   </u>	12.6
ļ	Endrin Ketone							!	
ļ	a. Chlordane_		5.64	5.68	16060150			!	
	g. Chlordane_[		!	!				<u> </u>	
	Toxaphene	7.26	7.13	7.38	2009953			!	
	Aroclor-1016_	7.46	2.41	251	100,6538	!	!	!	
	Aroclor-1221_		138	1.50	10/8/22	!		<u>!</u>	
	Aroclor-1232		2.42	2.46	545374	!		!	
	Aroclor-1242	401	3.93	4.09	35/40/	<u></u> !		!	
ļ	Aroclor-1248	5.62	5.61	5.73	2942/75	<del></del> !		!	
ļ	Aroclor-1254   Aroclor-1260	15,12	12.79	13.45	1776248	<del></del> ¦	¦	<b></b> -¦	;
¦	Areclor-1260_	- R.R.Z	8.68	<u>8,58</u>	1053768	<del></del> ¦		—:	!
П,					!		!	<u> </u>	

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. *D must be less than or equal to 15.0* for quantitation, and less than or equal to 20.0* for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D.

It iffication of such analytes is based primarily on pattern recognition

page __ of __

# 8E PESTICIDE EVALUATION STANDARDS SUMMARY Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: TTC ENVIRONMENTAL	Contract: HLA
Lab Code: Case No.:	SAS No.: SDG No.:
Instrument ID: <u>E PE 2000</u>	GC Column ID: 15% 0v-17/1.959000-210
Dates of Analyses: 5/1/87 to	5/14/87

EPA	LAB SAMPLE	DATE	TIME	%	
SAMPLE NO.	j ID	ANALYZED	ANALYZED	D	į
		=======			j ==
01 i	EVAL A	5/11/87	13:53	l	l
02 i	EVALB	5/11/87	13:14	0.17	ı
03 j	EVALC	5/11/87	12:3/	0.17	I
04	AR 1660	5/11/87	19:22	0.56	l
05 j	1 AR 1242	5/11/87	19:58	0.44	!_
06	AR 1248	5/11/87	20:34	1 <u>0.75</u>	١
07	1 AR 1254	5/11/87	21:10	0.67	۱
08	AR 1232	5/11/87	21:45	10.60	١
09	1 <u>AR 1221</u>	5/11/87	122:21	0.56	l
10	INDA	5/12/87	<u> 10 : 30 </u>	0.04	ا
11	I <u>INDB</u>	5/12/87	11:08	0.08	١
12	CHLORDANE	5/12/87	<u> 11 :44 </u>	0.32	l
13	TOXAPHENE	5/12/87	12:20	1.11	<u> </u>
14	METHOD BLANK	5/12/87	13:05	0.36	ا
15	METHOD SPIKE	5/12/87	13:44	0.56	<u> </u>
16	METHOD SPIKE OF	5/12/87	14:30	0.56	<u> </u>
17	<u>87-0277                                  </u>	5/12/87	15:15	0.79	<u> _</u>
18	<u>87-0278</u>	5/13/87	15:52	0.56	<u>                                      </u>
19	<del>7-0229</del>			!	<u> </u>
20	EVAL B	5/12/87	16:28	0.75	!
21	87-0279	5/12/87	17:21	!	!
22	87-0283	5/12/87	18:06	0.52	<u> </u>
23	87-0284	5/12/87	18:53	!	
24	DYAPHENE !	5/13/87	23:23	0.08	
25	TNDA	5/14/87	00:03	0.04	
26	TNDB	5/14/87	1:18	0.04	_
27	·!!				
28	·!!			!!	_
29	·!———!			ļ!	
30	·!———!			!	
31	·!!				_
32	·!!				
33	·¦				
34	·!				_
35	!!				
36	.¦!	!		<b></b>	
37	.!!			ļ <b></b> !	_
38	.'				_

^{*} Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns)

of __.

FORM VIII PEST-2

1/87 Rev.

# 9 PESTICIDE/PCB STANDARDS SUMMARY

Lab Name: TTC		-						(
.c Code:		ase No.	: _ 4 ·	_ SAS No.: _		SDG NO.:		-
Instrument ID:	O Vari	an		GC · Column	ID: <u>0</u>	v-101		
	DATE (	S) OF	FROM: 5	/15/87		OF ANALYSIS		
	ANALY	SIS	TO: 5	17/87		OF ANALYSIS		
	TIME(		FROM:	2: <i>4</i> 6		AMPLE ID		
	ANALY:	SIS	TO:	<del>8:43</del>	(STAN	DARD)		
COMPOUND	RT	1 . :	RT	CALIBRATION	RT	CALIBRATION	QNT	۴D
i -	Ì	WI	NDOW	FACTOR		FACTOR	Y/N	
į	į	FROM		į į		ļ		
====================================	J	1.66		17390100	##### <b>##</b>	<del>                                    </del>	===   : 	**=:
beta-BHC	1.85		1.51	14006000		i ——	ii-	
delta-BHC		2.12	2.24	8438950		<del></del>	¦¦-	
gamma-BHC	2.04	2.02	2.06	16788000			¦¦-	-
Heptaclor		3.36		15272850			¦¦-	
Aldrin	424	4.21	4.27	21365050		<u> </u>	¦}-	
Hept. Epoxide	7.27	522	5.31	17357150		¦	¦¦-	
Endosulfan I			1 <u>2.37</u> 16.72	15627450		¦	¦¦-	
Dieldrin	7.90		8.01	17/20300		<u> </u>	¦¦-	
4,4'-DDE	7.80	7.65		15587650			¦¦-	
Endrin	882		18.15 1905 ·	9737650	<del></del>		¦¦-	
Fndosulfan II			996			¦ <del>·</del>	¦¦-	
! 4'-DDD				10697225		¦	¦¦-	
·	10.10	9.81	10,39	1 <u>0295 750</u>  -5524475	<del></del>	¦	<b>!</b> -¦-	
Endo.Sulfate.   4,4'-DDT					<del></del>		¦¦-	
· ·	13.39	24. KI	14.11 20.01	1972700			! -	
Methoxychlor_	20.63	<u>20.35</u>	<u> </u>	218/555			!!-	
Endrin Ketone   a. Chlordane	44.85	22.69	23.06	1066125			!	
			ļ	!!			¦¦-	
g. Chlordane				!!			!!-	
Toxaphene				!!			-	
Aroclor-1016_				!!			!-	
Aroclor-1221	!			!———!		!	!_	
Aroclor-1232_	!	<u> </u>		!!		!	!_	
Aroclor-1242_				! <u>i</u> .		!	_	
Aroclor-1248				<u> </u>  .		!	!-	
Aroclor-1254_					!		!_	
Aroclor-1260_	!						!_	
l		<u> </u>		 ion was perfo		•	_	

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. *D must be less than or equal to 15.0* for quantitation, and less than or equal to 20.0* for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. If tification of such analytes is based primarily on pattern recognition

page __ of __

# BD PESTICIDE EVALUATION STANDARDS SUMMARY

Lab Name: JTC EN	UTRONMENIAL	Contract: HLA	
( _b Code:	Case No.:	_ SAS No.:	_ SDG No.:
Instrument ID: D VA	RIAN 3700	GC Column ID:	V-101
Dates of Analyses:	5/13/87 to	5/13/87	

# Evaluation Check for Linearity

	PESTICIDE	CALIBRATION   FACTOR   EVAL MIX A	CALIBRATION   FACTOR   EVAL MIX B	CALIBRATION   FACTOR   EVAL MIX C	%RSD.   ( =  <br  10.0%)	
•	ALDRIN ENDRIN 4,4'-DDT DBC					(1)

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve.

# Evaluation Check for 4,4'-DDT/Endrin Breakdown (percent breakdown expressed as total degradation)

		DATE	TIME	ENDRIN	4,4'-DDT	COMBINED
		ANALYZED	ANALYZED	ĺ	İ	[ (2) · [
		:=   ========	*********			
1	INITIAL	İ	İ	İ	j	i i
01		15/13/87	1 2:46	İ		5.25 4.04
02	EVAL MIX E	5/13/87	7:51	1		4,04
03	EVAL MIX E	3 i				
04	EVAL MIX B	3 i ———	1			
05	EVAL MIX E	ı i ———				
06	EVAL MIX B	, i —				
07	EVAL MIX B	, i———	,			ii
08	EVAL MIX B	3 i	1			
09	EVAL MIX B					
10	EVAL MIX B				1	
11	EVAL MIX B					
12	EVAL MIX B					i
13	EVAL MIX B	i				
14	EVAL MIX B					i
1		_	i	i	i	

(2) See Form instructions.

# 8E

# PESTICIDE EVALUATION STANDARDS SUMMARY Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: JTC ENU.	IRONMENIAL	Contract: <u>HLA</u>		
Code:	Case No.:	SAS No.:	_ SDG No.:	
Instrument ID: 0 V	<u>arian</u> 3700	GC Column ID: 🙍	V-161	
Dates of Analyses:	5/17/87 to	5/13.87		

EPA	LAB SAMPLE	DATE	TIME	1 8	ļ
SAMPLE NO.	ID	ANALYZED	ANALYZED	l D	*
		*********	******	=====	==
·I <u></u>	I <u>EVALB</u>	05/13/87	1 <u>2:46</u>	l	١
· [	INDA	05/13/87	3:23	0.45	ا
	INDB	05/13/87	4:01	0.21	l
<u> </u>	87-0277	05/13/87	4:40	0.10	I
1	87-0278	05/13/87	5:18	0.03	l
	87-6279	05/13/87	5.56	0.03	1
	87-0283	05/13/87	6:35	0.21	I <u> </u>
1	87-0284	05/13/87	7:13	0.48	1_
l	EVALB	05/13/87	7:51	0.21	١
I	METHOD BLANK	05/13/87	8:43	0.65	$ \lfloor                                   $
	1				l_
					$I \subseteq$
					I
				1	ı
					ı
			-		_
j					
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i					
ii					_
ii					
	i				_
				i	
				i	
ii	i				_
				i	
i				i	
ii	i		i	i	_
ii	i	i	i	i	
i ———i	i	i		——i	
i <del></del> -i	i	i	i	i	
i ——i	i	——i	———i	i	_
i <del></del> i	i	i	- <del></del> i	i	_

^{*} Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns)

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-		

PESTICIDE ORGANICS ANADIST	S DATA SHEET
Lab Name: <u>TTC FNVIRONMENTAL</u> Co	ontract: H(A
Lab Code: Case No.: S	AS No.: SDG No.:
Matrix: (soil/water) <u>WATER</u>	Lab Sample ID:
Sample wt/vol:(g/mL)_mL	Lab File ID: METHON BLANK
Level: (low/med) LOW	Date Received:
<pre>* Moisture: not dec dec</pre>	Date Extracted: 5/7/87
Extraction: (SepF/Cont/Sonc) CONT	Date Analyzed: <u>S/12/87</u>
GPC Cleanup: (Y/N) N pH:	Dilution Factor:
CAS NO. COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)
	<u> </u>

	<del></del>	
319-84-6alpha-BHC		U
319-85-7beta-BHC	i	u
319-86-8delta-BHC		11
58-89-9gamma-BHC (Lindane)	i	11
76-44-8Heptachlor	———i	ü
309-00-2Aldrin	ii	1/
1024-57-3Heptachlor epoxide	———i———i-	7,
959-98-8Endosulfan I	ii	1/
60-57-1Dieldrin	ii	1/
72-55-94,4'-DDE	———i	-ii
72-20-8Endrin		7/
33213-65-9Endosulfan II	i	11
72-54-84,4'-DDD	ii	<del>-ii</del>
1031-07-8Endosulfan sulfate	———i	U
50-29-34,4'-DDT	ii-	11
72-43-5Methoxychlor		Ü
53494-70-5Endrin ketone	ii	11
5103-71-9alpha-Chlordane	<del></del> i-	1/
5103-74-2gamma-Chlordane		-i/
8001-35-2Toxaphene	i	11
12674-11-2Aroclor-1016	ii	11
11104-28-2Aroclor-1221	ii	<del>u</del>
11141-16-5Aroclor-1232	ii -	u
53469-21-9Aroclor-1242	i-	Ü
12672-29-6Aroclor-1248	ii-	u
11097-69-1Aroclor-1254	——— i	11
11096-82-5Aroclor-1260	ii*	Ü
	iii-	

Lab Name: TTC ENVIRONMENTA	Contract: HLA	
Lab Code: Case No.:	4 SAS No.:	SDG No.:
Matrix: (soil/water) WATER	Lab Sa	ample ID: <u>&amp;7-0277</u>
Sample wt/vol:(g/	mL) <u>h6</u> Lab Fi	le ID:
Level: (low/med) Low	Date F	Received:
Moisture: not dec d	ec Date E	Extracted: <u><!--07/87</u--></u>
Extraction: (SepF/Cont/Sonc)	CONT Date A	nalyzed: <u>5/12/87</u>
PC Cleanup: (Y/N) N	pH: Diluti	on Factor:
CAS NO. COMPOUN	CONCENTRATION (ug/L or ug/	
319-84-6alpha-Bi   319-85-7beta-BHG   319-86-8beta-BHG   58-89-9gamma-Bi   76-44-8Heptach   309-00-2Aldrin   1024-57-3Brdosul   959-98-8Endosul   60-57-1Endrin   72-55-9Endrin   33213-65-9Endosul   72-54-8	CEHC HC (Lindane) lor epoxide fan I  fan II  chlor ketone hlordane hlordane he -1016 -1221 -1232 -1242 -1248 -1254	

1D PESTICIDE ORGANICS ANALYSIS DATA	EPA SAMPLE NO.
ab Name: TC ENVIRONMENTAL Contract	: HLA
ab Code: Case No.: 4 SAS No.	: SDG No.:
Matrix: (soil/water) <u>LWATER</u>	Lab Sample ID: <u>\$7-0278</u>
Sample wt/vol: /000 (g/mL) mL	Lab File ID:
evel: (low/med) <u>low</u>	Date Received:
Moisture: not dec dec	Date Extracted: 5/7/87
Extraction: (SepF/Cont/Sonc) <u>CONT</u>	Date Analyzed: <u>5/12/87</u>
PC Cleanup: (Y/N) N pH:	Dilution Factor:
	NTRATION UNITS:
CAS NO. COMPOUND (ug/L	or ug/Kg) Q .
319-84-6alpha-BHC	!!!_ <u>\</u> !
319-85-7beta-BHC	III
319-86-8delta-BHC	l <u></u> lu_l
58-89-9gamma-BHC (Lindane)	IIII
76-44-8Heptachlor	<u> </u>
309-00-2Aldrin	<u> </u>
1024-57-3Heptachlor epoxide	IIII
959-98-8Endosulfan I	1 <u></u> 1 <u></u> 1
60-57-1Dieldrin	IIII
72-55-94,4'-DDE	<u> </u>
72-20-8Endrin	<u> </u>
33213-65-9Endosulfan II	
72-54-84,4'-DDD	<u> </u>
1031-07-8Endosulfan sulfate	
50-29-34,4'-DDT	
72-43-5Methoxychlor	IIII
53494-70-5Endrin ketone	
5103-71-9alpha-Chlordane	
5103-74-2gamma-Chlordane_	IIII
8001-35-2Toxaphene	IIII
12674-11-2Aroclor-1016	iiiii
11104-28-2Aroclor-1221	IIII
11141-16-5Aroclor-1232	
53469-21-9Aroclor-1242	
12672-29-6Aroclor-1248	$\overline{\underline{}}$
11097-69-1Aroclor-1254	$\overline{\underline{}}$
11096-82-5Aroclor-1260	<del></del> iii

	1
Lab Name: TTC ENVIRONMENTAL Contract	::_NCA
Lab Code: Case No.: 4 SAS No.	: SDG No.:
datrix: (soil/water) <u>MATER</u>	Lab Sample ID: <u>\$7-0279</u>
Sample wt/vol: (g/mL) mL	Lab File ID:
Level: (low/med)	Date Received:
Moisture: not dec dec	Date Extracted:
Extraction: (SepF/Cont/Sonc) CONT	Date Analyzed: <u>S/12/87</u>
SPC Cleanup: (Y/N) N pH:	Dilution Factor:
	ntration units:
319-84-6	<u> </u>
11096-82-5Aroclor-1260	

A Name and A state of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State of the State	. 2/1 4
ab Name: TTC ENVIRONMENTAL Contract	:_ <i>\flame \land\land\land\land\land\land\land\land</i>
ab Code: Case No.: 4 SAS No.	: SDG No.:
atrix: (soil/water) <u>wateR</u>	Lab Sample ID: <u>\$7-0283</u>
ample wt/vol: /000 (g/mL) mc	Lab File ID:
evel: (low/med) <u>Low</u>	Date Received:
Moisture: not dec dec	Date Extracted: 5/7/87
ctraction: (SepF/Cont/Sonc) CANT	Date Analyzed: 5/12/87
PC Cleanup: (Y/N) N pH:	Dilution Factor:
	ntration units: or ug/Kg)
319-84-6	
11097-69-1Aroclor-1254	<u></u>

PESTICIDE ORGANICS ANA	LYSIS DATA SHEET
Lab Name: TTC ENVIRONMENTAL	Contract: HLA
Lab Code: Case No.:	SAS No.: SDG No.:
Matrix: (soil/water) <u>WATER</u>	Lab Sample ID: <u>97-0284</u>
Sample wt/vol: /OOC (g/mL) m	Lab File ID:
Level: (low/med) Low	Date Received:
E Moisture: not dec dec	Date Extracted: 5/7/87
Extraction: (SepF/Cont/Sonc) CO	NT Date Analyzed: 5/12/87
GPC Cleanup: (Y/N) / pH:	Dilution Factor:
CAS NO. COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) wg/L Q

·	
319-84-6alpha-BHC	.     <i>u</i>
319-85-7beta-BHC	ii
319-86-8delta-BHC	——————————————————————————————————————
58-89-9gamma-BHC (Lindane)	
76-44-8Heptachlor	
309-00-2Aldrin	iùi
1024-57-3Heptachlor epoxide	
959-98-8Endosulfan I	iii
60-57-1Dieldrin	i- <del></del> i
72-55-94,4'-DDE	——————————————————————————————————————
72-20-8Endrin	i- <del></del> -i
33213-65-9Endosulfan II	
72-54-84,4'-DDD	i u
1031-07-8Endosulfan sulfate	i
50-29-34,4'-DDT	i
72-43-5Methoxychlor	ii
53494-70-5Endrin ketone	
5103-71-9alpha-Chlordane	
5103-74-2gamma-Chlordane	
8001-35-2Toxaphene	i u
12674-11-2Aroclor-1016	i <del>u</del> i
11104-28-2Aroclor-1221	i u i
11141-16-5Aroclor-1232	i u
53469-21-9Aroclor-1242	i ü
12672-29-6Aroclor-1248	i u
11097-69-1Aroclor-1254	<del>i ü</del> i
11096-82-5Aroclor-1260	_ <del></del> i_u_i
i	<del></del> i <del></del> i

# 10 PESTICIDE/PCB IDENTIFICATION

PESI	ICIDE/PCB IDENTIFICA	.110N	ı		$ _{1}$
Lab Name: TTC ENV	TRONMENTAL CO	ntract: <u>HLA-5</u> 3	_		<u>.</u>
Lab Code:	Case No.: S	AS No.:	SDG No.:		
GC Column ID (1): //	<u>5%04-17/1</u> 95%0V-210	GC Column ID (	2): <u>ov-</u>	101	
Instrument ID (1): (	E PE 2000	Instrument ID	(2): <u>D V A</u>	RIAN	
Lab Sample ID: 87-	· <i>02</i> 78				
	(only if	confirmed by GC/	(MS)		==
	RETENTION TIME	RT WINDOW OF STANDARD FROM TO	QUANT? (Y/N)	GC/MS? (Y/N)	
01 GAMMA-BHC	Column 1 <u>1.95</u>		_	_	
02	Column 2			· <del>-</del>	
03 HEPTACLOR	Column 1 2.42		_	-	
04	Column 2		_	-	4
05 <u>ENDRIN</u>	Column 1 <u>8.83</u>		· _	-	
06	Column 2	<u> </u>	_		
07	Column 1		_	_	
08	Column 2			_	
09	Column 1		-	_	
10	Column 2	<del></del>	-	_	
11	Column 1		_	_	
12	Column 2		_	_	
Comments:					

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# 10

PESTI	10 CIDE/PCB IDENTIFICA	ATION	EPA S	SAMPLE NO.
Lab Name: TC ENV			•	
GC Column ID (1): // 5				_
Instrument ID (1): E		Instrument ID (		
Lab Sample ID: 87-		2.1002 (2.00.10 2.0 )	.=/· <u>.:</u>	81770 5700
Lab File ID:		confirmed by GC/	MS)	
PESTICIDE/PCB	RETENTION TIME	RT WINDOW OF STANDARD FROM TO	QUANT? (Y/N)	GC/MS? (Y/N)
01 GAMMA - BHC	Column 1 1.94	1.94 1.98	_	_
02	Column 2	<del></del>	_	. –
03 HEPTACLOR	Column 1 2.41	2.39 2.45	_	_
04	Column 2		_	_
05 ENDOSULFANIE	Column 1 8.79	8.78 <u>8.82</u>		_
06	Column 2		_	
07 <u>4 4'- 00 B</u>	Column 1 /1.06	11.06 11.10	_	_
08	Column 2		_	_
09	Column 1		_	_
10	Column 2		_	_
11	Column 1		_	_
12	Column 2		_	_
Comments:				

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# PESTICIDE/PCB IDENTIFICATION

Lab Name: TTC ENVIRO			•	
Lab Code:	Case No.: <u>4</u>	SAS No.:	SDG No.:	<del></del> -
GC Column ID (1): 1.5	5% <u>0v-17/</u> 195% ov	210 GC Column ID (2	): <u>ov-</u>	<u>'0 / _</u>
Instrument ID (1): £	: <i>PE 200</i> 0	Instrument ID (	2): <u>p v</u>	BRIAN 3700
Lab Sample ID: METHO	DO BLANK			
Lab File ID:	(only		MS)	
PESTICIDE/PCB		RT WINDOW OF STANDARD FROM TO	QUANT? (Y/N)	
01 GAMMA-BHC	Column 1 1.95	<u> 1.94   1.98 </u>	_	
02	Column 2	· — —	-	· -
03 HEPTACLOR	Column 1 <u>2.42</u>	2.39 2.45	-	-
04	Column 2	· ———	-	-
05 <u>ALORIN</u>	Column 1 2.97	2.85 3.05	· _	-
06	Column 2	· ——	-	
07 <u>ENOSULFAN II</u>	Column 1 8.78	8.78 8.82	_	_
08	Column 2		_	_
09	Column 1			-
10	Column 2		_	_
11	Column 1		-	_
12	Column 2		_	-
Comments:				

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# JTC ENVIRONMENTAL CONSULTANTS

SAMPLE ID: Method Spike

MATRIX: WATER

INSTRUMENT ID: E PE 2000

ANALYST: RCK

COMPONENT	Ð×	As	Vt (mL)	Is(ng)	Vi	CONC
Gammer BHC	1 157/39	1 35595	31 10	10.01	1 2	1.2207
gamma BHC heptacler	1 84158	213847	3 1 10	10.02	1 2	1.2179
aldrin	191988	6 42099	4 10	10.02	1 2	1,2185
dieldain	123656	181 49369	0 1 10	16.02	1 2	1 .4792
endrin	1 19850	71 40350	51 10	10.02	1 2	1 - 4930
POT	1 48905	1 16233	6 16	10.04	1 2	1 16025
	1	1	1	1	1	1
	<u> </u>			1		1
	1	1	ı	ı	1	1
	1	1	1	1	1	1
	1	l	l	1	ı	1
	1	1	1	1	1	1
•	1	I	1	l	l	1
	l	1	l	1	ì	1
	1	1	1	1	)	1
	1	l	l	1	I	1
	l	l	1	1	1	1

Ax = response of sample

As = response of standard

Is = amount of standard injected (ng)

Vt = total extract volume including dilutions

Vi = volume of extract injected

Vs = volume of water extracted

# JTC ENVIRONMENTAL CONSULTANTS

SAMPLE ID: METHOD SPINE DUP

MATRIX: WATER

INSTRUMENT ID: (E) PF. 2000

ANALYST: RCK

COMPONENT	Ax	As	Vt (mL)	Is(ng)	Vi	CONC
gamma BHC	11066020	35595	31 /0	10,01	1 2	10.1483
gamma BHC heptacler	1799486	138473	1 10	10.02	1 2	10.2070
aldrin	1880833	1420994	1 10	10.02	12	10.209
dieldain	1275490	21 493690	1 10	16.02	1 2	10.5580
endrin	1570993	1 403505	51 10	10.02	12	10.3893
DOT	1430868	1162336	,1 16	10.04	12	10.5308
	<u> </u>	I	1	<u> </u>	Ι.	1
. <u>*</u> * .	1	1	1	1	1	1
	1	1	1	1	1	<u> </u>
	1	l	1	1	1	1
	1	1	1	1	1	ı
·	1	l .	1	1	1	1
	1	1	1	1	1	1
	1	i	1	1	ïi	1
	1	ı	l	1	1	1
	1	1	1	1	1	1
	1	1	1	ı	1	1

Ax = response of sample

As = response of standard

Is = amount of standard injected (ng)

Vt = total extract volume including dilutions

Vi = volume of extract injected Vs = volume of water extracted

# APPENDIX C CORRECTIVE ACTION REPORTS

# CORRECTIVE ACTION REPORT CR-HLA1

# Background

On April 24, 1987, high acid surrogate recovery was found in Sample 87-0252 and on May 1, 1987, high acid surrogate recovery and no base-neutral recovery was obtained for Sample 87-0268. The recovery problem for both samples was discovered by Mr. John Schreiber, GC/MS Laboratory Supervisor, who immediately brought these matters to the attention of Ms. Ann Rosecrance, Project Manager, and Ms. Karen Forstrom, Quality Assurance Officer. In accordance with JTC's QA/QC plan, a situation alert was initiated and the matter investigated by the GC/MS staff under the direction of Ms. Rosecrance.

# Investigation

The following steps were taken for both cases to pinpoint the cause of the surrogate recovery problems:

- All calculations were checked.
- 2. Standards were checked.
- 3. Surrogate solution was analyzed.
- 4. Sample preparation logbooks were checked.
- 5. Sample extract was reanalyzed in the case of Sample 87-0268.

# Results and Conclusions

In both instances, the calculations were found to be correct. Analysis of the standard and surrogate solution indicated that they were not the cause of the recovery problem. Reanalysis of the sample extract for Sample 87-0268 on April 30, 1987, yielded similarly high acid surrogate recovery. Therefore, calculation error, bad surrogate solution or standards, and analytical error were ruled out and the problem was attributed to an error in the sample preparation procedure. After a discussion with the sample preparation chemist, it was concluded that the acid surrogate solution most likely had been added twice to Samples 87-0252 and 87-0268, and that the base-neutral surrogate solution had not been added to Sample 87-0252.

# Corrective Action

Sample 87-0252 was reextracted on April 28, 1987, and reanalyzed on May 7, 1987. Satisfactory results were obtained and reported to the client. Sample 87-0268 could not be reextracted due to an insufficient amount of sample remaining. Since the sample preparation error did not affect the samples and since no acid/base-neutral compounds were detected in the sample, the data was reported to the client. The data, however, was flagged and an explanatory note provided.

# CORRECTIVE ACTION REPORT CR-HLA2

# Background

Low recovery, outside the control window, was obtained in the method blank spike that was run with the pesticide samples for two compounds, endrin and dieldrin. The problem was discovered by Mr. Rick King, GC Laboratory analyst, who immediately brought these matters to the attention of Ms. Ann Rosecrance, Project Manager, and Ms. Karen Forstrom, Quality Assurance Officer. In accordance with JTC's QA/QC plan, a situation alert was initiated and the matter investigated by the GC staff under the direction of Ms. Rosecrance.

# Investigation

The following steps were taken to pinpoint the cause of the low recovery obtained for these compounds:

- 1. All calculations were checked.
- The standards were checked.
- The spiking solution was analyzed.
- 4. The sample preparation logbooks were checked.

# Results and Conclusions

All calculations were found to be correct and the standards were satisfactory. Analysis of the spiking solution indicated that it was the cause of the low recovery problem. The true value for both compounds is .5 ppm; however, when the spiking solution was analyzed, endrin was found at a concentration of only .055 ppm and dieldrin at only .188 ppm.

# Corrective Action

A new method spike solution was made and analyzed prior to its use. The analysis indicated that the new solution was satisfactory. The samples were then reextracted and reanalyzed, and in-control recovery was found for all compounds in the method spike. The rerun data was reported to the client.

# APPENDIX D SUMMARY OF ANALYTICAL REQUIREMENTS

# REQUIREMENTS FOR ANALYSIS OF HLA SAMPLES FOR ORGANIC PRIORITY POLLUTANT COMPOUNDS

# I. ANALYSIS REQUIREMENTS

- A. Compound List: Priority Pollutants (see attached List)
  - 1. Acids (11)
  - Base/Neutrals (45, including benzidine)
  - Volatiles (31, including acrolein and acrylonitrile)
  - 4. Pesticides/PCBs (25)
- B. Analysis Method:
  - 1. Acid/Base/Neutrals: 6251
  - Volatiles: 624¹
  - 3. Pesticides: 6081
- C. Data: According to U.S. Environmental Protection Agency Contract Laboratory Program (CLP) requirements. See Section III for complete documentation requirements.

# II. QA/QC REQUIREMENTS

- A. Method Blank: 1 per 20 samples per matrix
  - B. Matrix Spike or Blank Spike: 1 per 20 samples per matrix
  - C. Matrix Spike Duplicate or Blank Spike Duplicate: 1 per 20 samples per matrix
  - D. Surrogate Spikes: all samples and blanks
  - E. Instrument Tuning and Calibration: every 12 hours

# III. DOCUMENTATION REQUIREMENTS

- A. Acid/Base/Neutrals and Volatiles
  - 1. Sample Data Sheet
  - Surrogate Percent Recovery Summary (Form II)
  - Matrix Spike/Matrix Spike Duplicate Recovery (Form III)
  - Reagent Blank Summary (Form IV)
  - 5. GC/MS Tuning and Mass Calibration (Form V)
  - 6. Initial Calibration Data (Form VI)
  - Continuing Calibration Check (Form VII)

B. Pesticides/PCBs

o

- 1. Sample Data Sheet
- Surrogate Percent Recovery Summary (Form II)
- 3. Matrix Spike/Matrix Spike Duplicate Recovery (Form III)
- Reagent Blank Summary (Form IV)
- 5. Pesticide/PCB Standards Summary (Form IX)
- Pesticide/PCB Identification (Form X)
- IV. RECOGNITION OF AND REQUIREMENTS FOR OUT-OF-CONTROL EVENTS
  - A. Control limits for Volatile and Acid/Base Neutral Surrogates in Blanks: According to JTC's in-house control limits.
  - B. Control limits for all parameters except Volatiles and Acid/Base Neutral Surrogates in Laboratory Blanks: According to U.S. Environmental Protection Agency Contract Laboratory Program Guidelines.
  - C. Out-of-Control Response: follow JTC's QA/QC Plan, revised 2/3/87

¹ U.S. EPA TEST METHODS FOR ORGANIC CHEMICAL ANALYSIS OF MUNICIPAL AND INDUSTRIAL WASTEWATER, EPA-600/4-82-057, JULY 1982.

# REQUIREMENTS FOR ANALYSIS OF HLA SAMPLES FOR METALS

(Metals: Cd, Cr, Pb)

# I. ANALYSIS REQUIREMENTS

- Α. Analytical Methods:
  - $213.2^{1}$ 1. Cd:
  - 218.2¹ 2. Cr:
  - 239.2¹ 3. Pb:
- В. Preparation Method for Water:
  - WFL D-1-A2 Cd:
  - WFL D-1-A2 2. Cr:
  - WFM D-1-A² Pb:
- c. Preparation Method for Soil:
  - 1. Cd:
  - SFL-D-6.5² SFL-D-6.5² 2. Cr:
  - SFM-D-6.6² Pb: 3.
- D. According to U.S. Environmental Protection Agency Contract Laboratory Program Requirements (CLP)

C

# II. QA/QC REQUIREMENTS

- Method Blank: 1 per 20 samples per matrix
- В. Matrix Spike: 1 per 20 samples per matrix
- c. Duplicate: 1 per 20 samples per matrix
- D. Blank Spike/Laboratory Control Sample: 1 per 20 samples per matrix
- E. Calibration Standards: beginning of each day
- F. Continuing Calibration Standard: every 10 samples analyzed

# III. DOCUMENTATION REQUIREMENTS

- A. Sample Data Sheet
- Initial and Continuing Calibration Standard (Form B. II)
- c. Blank Samples (Form III)
- D. ICP Interference Check Sample* (Form IV)
- E. Spike Sample Recovery (Form V)
- F. Duplicates (Form VI)
- G. Instrument Detection Limit and Laboratory Control Samples (Form VII)
- н. Standard Addition Results* (Form VIII)

IV. RECOGNITION OF AND REQUIREMENTS FOR OUT-OF-CONTROL EVENTS

- A. Control limits for Blank Spikes/Laboratory Control Samples: According to JTC's in-house control limits
- B. Control limits for all parameters, except Blank Spikes/Laboratory Control Samples: According to U.S. Environmental Protection Agency Contract Laboratory Program Guidelines
- C. Out-of-Control Response: follow JTC's QA/QC Plan, revised 2/3/87

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^{1 &}quot;METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES," EPA-600/4-79-020, MARCH 1979.

² U.S. ENVIRONMENTAL PROTECTION AGENCY CONTRACT LABORATORY PROGRAM STATEMENT OF WORK FOR INORGANIC ANALYSES.

# REQUIREMENTS FOR ANALYSIS OF HLA SAMPLES FOR COD

# ANALYSIS REQUIREMENTS I.

- A. Analytical Methods for Water: Hach COD specifications
- Analytical Methods for Soil: 3-3931 В.
- c. Data: according to JTC's in-house requirements

# II. QA/QC REQUIREMENTS

- Method Blank: 1 per 20 samples per matrix Α.
- В. Duplicate: 1 per 20 samples per matrix
- c. Independent Reference Standard: 1 per 20 samples per matrix
- D. Initial and Continuing Calibration: beginning of each analytical run/every 10 samples analyzed

# III. DOCUMENTATION REQUIREMENTS

- A. Sample Data Sheet
- в. QA/QC Summary (includes results of IIA, B, C, D above)
- c. Spectrophotometer calibration data, signed and dated in Equipment Use Log

# RECOGNITION OF AND REQUIREMENTS FOR OUT-OF-CONTROL EVENTS IV.

- Control Limits: according to JTC's in-house control limits (see memo dated 3/16/87)
  Out-of-Control Response: follow JTC's QA/QC Plan, A.
- B. revision 2/3/87

¹ PLUMB, R.H., JR., 1981, PROCEDURES FOR HANDLING SEDIMENT AND WATER SAMPLES, TECHNICAL REPORT EPA/CE-81-1.

# REQUIREMENTS FOR ANALYSIS OF HLA SAMPLES FOR pH

# I. ANALYSIS REQUIREMENTS

- A. Analytical Methods for Water: 150,21
- B. Analytical Methods for Soil: 3-512
- C. Data: according to JTC's in-house requirements

# II. QA/QC REQUIREMENTS

- A. Method Blank: 1 per 20 samples per matrix
- B. Duplicate: 1 per 20 samples per matrix
- C. Independent Reference Standard: 1 per 20 samples per matrix

# III. DOCUMENTATION REQUIREMENTS

- A. Sample Data Sheet
- B. QA/QC summary (includes results of IIA, B, C above)
- C. pH meter calibration data, dated and signed in Equipment Use Log

# IV. RECOGNITION OF AND REQUIREMENTS FOR OUT-OF-CONTROL EVENTS

- A. Control Limits: according to JTC's in-house QA/QC limits (see memo dated 3/16/87)
- B. Out-of-Control Response: follow JTC's QA/QC Plan, revision 2/3/87

^{1 &}quot;METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES," EPA-600/4-79-020, MARCH 1979.

PLUMB, R.H., JR., 1981, PROCEDURES FOR HANDLING SEDIMENT AND WATER SAMPLES, TECHNICAL REPORT EPA/CE-81-1.

# REQUIREMENTS FOR ANALYSIS OF HLA SAMPLES FOR SPECIFIC CONDUCTIVITY

# I. ANALYSIS REQUIREMENTS

- Analytical Methods for Water: 120.11
- в. Analytical Methods for Soil: not required
- c. Data: according to JTC's in-house requirements

# II. QA/QC REQUIREMENTS

- Α.
- B.
- Method Blank: 1 per 20 samples per matrix Duplicate: 1 per 20 samples per matrix Independent Reference Standard: 1 per 20 samples c. per matrix
- D. Laboratory Control Sample (0.1M KCI): 1 per 20 samples per matrix

# III. DOCUMENTATION REQUIREMENTS

- Sample Data Sheet Α.
- В. QA/QC summary (includes results of IIA, B, C, D above)
- Conductivity meter calibration data, signed and c. dated in Equipment Use Log

# IV. RECOGNITION OF AND REQUIREMENTS FOR OUT-OF-CONTROL EVENTS

- Control Limits: according to JTC's in-house control limits (see memo dated 3/16/87)
- Out-of-Control Response: follow JTC's QA/QC Plan, B. revision 2/3/87

^{1 &}quot;METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES," EPA-600/4-79-020, MARCH 1979.

# REQUIREMENTS FOR ANALYSIS OF HLA SAMPLES FOR OIL AND GREASE

# I. ANALYSIS REQUIREMENTS

- Analytical Methods for Water: 413.21 A.
- Analytical Methods for Soil: 3-284² B.
- c. Data: according to JTC's in-house requirements

# II. QA/QC REQUIREMENTS

- Α.
- В.
- Method Blank: 1 per 20 samples per matrix Duplicate: 1 per 20 samples per matrix Independent Reference Standard: 1 per 20 samples c. per matrix
- D. Initial/Continuing Calibration Standard: at the beginning of each analytical run/every 10 samples analyzed

# III. DOCUMENTATION REQUIREMENTS

Sample Data Sheet

2.0

- QA/QC Summary (includes results of IIA, B, C, D В. above)
- Infrared Spectrophotometer calibration data signed and dated in Instrument Use Log

# RECOGNITION OF AND REQUIREMENTS FOR OUT-OF-CONTROL EVENTS IV.

- Control Limits: according to JTC's in-house control limits (see memo dated 3/16/87)
  Out-of-Control Response: follow JTC's QA/QC Plan,
- B. revision 2/3/87

^{1 &}quot;METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES," EPA-600/4-79-020, MARCH 1979.

² PLUMB, R.H., JR., 1981, PROCEDURES FOR HANDLING SEDIMENT AND WATER SAMPLES, TECHNICAL REPORT EPA/CE-81-1.

# REQUIREMENTS FOR ANALYSIS OF HLA SAMPLES FOR TOC

### I. ANALYSIS REQUIREMENTS

- Analytical Methods for Water: 415.21
- В. Analytical Methods for Soil: Dohrmann DC-80 Analysis specifications
- c. Data: According to JTC's in-house requirements

# II. QA/QC REQUIREMENTS

- A Method Blank: 1 per 20 samples per matrix
- B. Duplicate: 1 per 20 samples per matrix
- c. Independent Reference Standard: 1 per 20 samples 🦠 per matrix
- Initial Calibration: beginning of each analytical D.
- Continuing Calibration: every 10 samples analyzed

# III. DOCUMENTATION REQUIREMENTS

A. Sample Data Sheet

- В. QA/QC Summary (includes results of IIA, B, C, D above)
- Calibration data, signed and dated in Equipment Use Log

# recognition of and requirements for out-op-control events

- Control Limits & according to JTC's in-house control limits (see memo dated 3/16/87)
- Out-of-Control Response: follow JTC's QA/QC Plan, revision 2/3/87

^{3 - 79-020,} MARCH 1979.

### REQUIREMENTS FOR ANALYSIS OF HLA SAMPLES FOR TOX

### I. ANALYSIS REQUIREMENTS

- Analytical Methods for Water: 90201
- Analytical Methods for Soil: Ethyl acetate в. extraction for extractable organic halides; Dohrmann DX-20 analysis specification
- c. Data: According to JTC's in-house requirements

### II. QA/QC REQUIREMENTS

- Method Blank: 1 per 20 samples per matrix
- Duplicate: 1 per 20 samples per matrix В.
- c.
- Initial Calibration: beginning of each analytical
- Continuing Calibration: every 10 samples analyzed

### DOCUMENTATION REQUIREMENTS III.

- Α. -Sample Data Sheet
- QA/QC Summary (includes results of IIA, B, C, D B. above)
- Calibration data, signed and dated in Equipment Use Log

### RECOGNITION OF AND REQUIREMENTS FOR OUT-OF-CONTROL EVENTS

Control Limits: according to JTC s in-house control limits (see memo dated 3/16/87)

Out-of-Control Response: follow JTC's QA/QC Plan revision 2/3/87

U.S. ENVIRONMENTAL PROTECTION AGENCY TEST METHODS FOR 🐔 EVALUATING SOLID WASTE PHYSICAL/CHEMICAL METHODS, SW-846, 2ND 🗞 EDITION, U.S.EPA, 1985.

### PRIORITY POLLUTARY LIST

### ORGANICS

### ACID COMPOUNDS

PP No.	CAS No.	Compound
(21A)	88-06-2	2,4,6-trichlorophenol
(22A)	99-50-7	p-chloro-m-cresol
(24A)	95-57-8	2-chlorophenol
(31A) ·	120-83-2	2,4-dichlorophenol
(34A)	105-67-9	2,4-dimethylphenol
(57A) Practical	88-75-5	2-nitrophenol
(A8E)	100-02-7	4-nitrophenol
(59A)	51-28-5	2,4-dimitrophenol
(60A)	534-52-1	4,6-dinitro-2-methylphenol
(64A)	87-86-5	pentachlorophenol
(65A)	108-95-2	phenol

### BASE/NEUTRAL COMPOUNDS

PP No.	CAS No.	Compound
		gray and a part of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contrac
(1B)	83-32-9	acenaphthene
(5B)	92-87-5	benzidine
(8B)	120-82-1	1,2,4-trichlorobenzene
g~(9B) ************************************	(118-74-1 )	hexachlorbenzene
(12B)	67-72-1	hexachloroethane
(18B)	111-44-4	bis(2-chloroethyl)ether
(20B)	91-58-7	2-chloronaphthalene
(25B) 🚎 🚎	95-50-17	1,2-dichlorobenzene
(26B)	541-73-1	1,3-dichlorobenzene
(27B)	106-46-7	1,4-dichlorobenzene
(28B)	91-94-1	3,3'-dichlorobenzidine
(35B)	121-14-2	2,4-dinitrotoluene
(36B)	606-20-2	2,6-dinitrotoluene
(37B)	122-66-7	1,2-diphenyhydrazine
(39B)	206-44-0	fluoranthene
(40B)	7005-72-3	4-chlorophenyl phenyl ether
(41B)	101-55-3	4-bromophenyl phenyl ether
(42B)	39638-32-9	bis (2-chloroisopropyl) ether
(43B)	111-91-1	bis (2-chlorethoxy) methane
4 4	87-68-3	hexachlorobutadiene
(52B) <i>(</i> 53B)	77-47-4	hexachlorocyclopentadiene
(54B)	73-99-1	isophorone
(55B)	91-20-3	
		naphthalene
(56B)	98-95-3	nitrobenzene
(62B)	86-30-6	N-nitrosodiphenylamine
(63B)	621-64-7	N-nitrosodipropylamine
(66N)	117-81-7	bis (2-ethylhexyl)phthalate

### Pariority Politicans at . (Sontinued)

PP No.	CAS No.	Compound	_
(67B)	85-68-7	benzylbutylphthalate	
(68B)	84-74-2	di-n-butylphthalate	
(69B)	117-84-0	di-n-octylphthalate	
(70B)	84-66-2	diethylphthalate	
(71B)	131-11-3	dimethylphthalate	
(72B)	56-55-3	benzo(a) anthracene	
(73B)	50-32-8	benzo (a) pyrene	
(74B)	205-99-2	benzo(b) fluoranthene	
(75B)	207-08-9	benzo(k) fluoranthene	
(76B)	218-01-9	chrysene	
(77B)	208-96-8	acenaphthylene	
(78B)	120-12-7	anthracene	, ·
(79B)	191-24-2	benzo (ghi) perylene	٠
(80B)	86-73-7	fluorene	·.· •
(81B)	85-01-8	phenanthrene	
(82B)	53-70-3	dibenzo (a,h) anthracene	•
(83B) ヤッド 変数		indeno (1, 2, 3-cd) pyrene	
(84B)	129-00-0	pyrene	2.5

### VOLATILES

PP No.	CAS No.	Compound	
(2V)	107-02-8	acrolein	
(3V) =	25. 名で107-13-128で	acrylonitrile	76 50.
		benzene	
(6V)	56-23-5	carbon tetrachloride	
(70)	108-90-7	chlorobenzene	
(10V)	107-06-2	1,2-dichlorethane	THE STATE OF
(117)		1.1.1-trichloroethane	
(13V)		1.1-dichloroethane	
(14V)	79-00-5	1,1,2-trichloroethane	
(15V)	79-34-5	1,1,2,2-tetrachloroet	
(16V)	75-00-3	chloroethane	
(19V)	110-75-8	2-chloroethylvinyl et	her
(23V)	67-66-3	chloroform	
(29V)	75-35-4	1,1-dichloroethene	•
(30V)	156-60-5	trans-1,2-dichloroeth	
(32V)	73-87-5	1,2-dichloropropane	ene
(33V) ·	10061-02-6	trans-1,3-dichloropro	
(337)		cis-1,3-dichloroproper	
(38V) . · · ·		ethylbenzene	
(44V)	75-09-2	methylene chloride	••.
(45V)	74-87-3	chloromethane	
(46V)	74-83-9		
(46V) (47V)	75-25-2	bromomethane bromoform	
(48V)			
•	75-27-4	bromodichloromethane	
(49V)	75-69-4	fluorotrichloromethane	2

### PRIORITY POLLUTANT LIST (Continued)

PP No.	CAS No.	Compound
(50V)	75-71-8	dichlorodifluoromethane
(51V)	124-48-1	chlorodibromomethane
(85V)	127-18-4	tetrachloroethene
(86V)	108-88-3	toluene
(87V)	79-01-6	trichloroethene
(88V)	75-01-4	vinyl chloride
PESTICIDES		
PP No.	CAS No.	Compound
(89P)	309-00-2	aldrin
(90P)	60-57-1	dieldrin
(91P)	57-74-9	. chlordane .
(92P)	50-29-3 · S	## 4,4'-DDT
5 (93P)	72-55-9	4,4'-DDE
(94P)	72-54-8	4,4'-DDD
(95P)	115-29-7	<pre>&lt;-endosulfan</pre>
(96P)	115-29-7	8-endosulfan
(97P)~~~~	1031-07-8	endosulfan sulfate
(98P)	72-20-8	endrin .
(99P) - (99P)	7421-93-4	endrine aldehyde
(100P)	76-44-8	heptachlor
#1101P)	1024-57-3	heptachlor epoxide
(102P)	319-84-6 震動	
(103P) 点流流流	319-85-7	
(104P)	319-86-8	
(105P)	58-89-9	-BHC (lindane)
(106P)	53469-21-9	PCB-1242
(107P)	11097-69-1	PCB-1254
(108P)	11104-28-2	PCB-1221
(109P)	11141-16-5	PCB-1232
(110P)	12672-29-6	PCB-1248
(111P)	11096-82-5	PCB-1260
(112P)	12674-11-2	PCB-1016
(113P)	8001-35-2	toxaphene

### APPENDIX E EXPLANATION OF EPA FORMS USED AS QUALITY CONTROL CHARTS FOR ORGANIC AND INORGANIC ANALYSES

### NOTATION UTILIZED ON EPA INORGANIC FORMS

NR = Not required by contract at this time

### Form I:

- Value= If the result is a value greater than or equal to the instrument detection limit but less than the contract-required detection limit, report the value in brackets (i.e., [10]). Indicate the analytical method used with P (for ICP), A (for Flame AA) or F (for Furnace AA).
- U = Indicates element was analyzed for but not detected. Report with the instrument detection limit value (e.g., 10U).
- E = Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
- s = Indicates value determined by method of standard
   addition.
- R = Indicates spike sample recovery is not within control limits.
- * = Indicates duplicate analysis is not within control limits.
- + = Indicates the correlation coefficient for method of standard addition is less than 0.995.

Indicate method used: P for ICP; A for Flame AA, and F for Furnace AA.

### EXPLANATION OF EPA FORMS USED BY JTC AS QUALITY CONTROL CHARTS

### Inorganics (Metals):

### Form II

Initial and Continuing Calibration Standards

The Percent Recovery (%R) of independent standards used in instrument calibration is calculated as follows:

 $&R = (FV/BV) \times 100$ 

Where: FV = found value

TV = true value

Control Limits:

Mercury, Tin, R = 80% - 120% All other compounds, R = 90 - 110%

Form III

Blank Samples

Initial calibration blanks, continuing calibration blanks and method (preparation) blanks are run with each sample lot, g vig a veget grape om et en en grapete en engligtet de 🕏

Control Limits:

Blank concentration values above the required detection limit or below the negative required detection limit (Required detection limits are listed in Table 5 of the JTC Quality Assurance/ Quality Control manual).

Form IV

ICP Interference Check Sample

JTC uses commercially supplied or EPA reference materials to check for interferences and background correction. The true value of the reference material is the average determined concentration. JTC uses the mean value determined by the EPA as the true value. The %R for each element is determined Control Limits: as in Form II.

For all elements, R = 80% - 120%

Form V

Spike Sample Recovery

Spiked samples are run with each sample lot to determine the applicability of the method to the sample matrix. The %R for all elements analyzed is determined as follows:

$$R = \frac{(SSR - SR)}{SA}$$
 x100

Where; SSR = value of spike samples SR = value of unspiked sample

SA = value of spike

Control Limits:

For all elements, R = 75% - 125%

Form VI

Duplicates

Duplicate samples are run to check for the precision of the method for all elements that are analyzed. The Percent Reproducibility (%RPD) for each duplicate set is determined as follows:

$$RPD = \frac{S - D}{(S + D)/2} \times 100$$

Where; S = Sample value

D = Duplicate value

Control Limits:

For samples >5 times the detection limit RPD = 20%

Form VII

Instrument Detection Limits and Laboratory Control Samples

Instrument detection limits must be less than the required detection limits. Laboratory control samples are samples which are of known concentration which have been subjected to the same procedures and methodology as the samples. They are run with each sample lot to check for the accuracy of the method. The %R is calculated for each compound as with Form II.

### Control Limits:

For all compounds, R = 80% - 120%

Form VIII

**!**...

Standard Addition Results

Standard additions are required if a sample, with a concentration greater than the required detection, produces an analytical spike recovery that is not equal to 85 - 115%. Standard additions of the following concentrations are made to aliquots of the samples:

50% of original sample concentration 100% of original sample concentration 150% of original sample concentration

The correlation coefficient (R) is then calculated for the Standard addition curve.

Control Limits:

A correlation coefficient (R) >.995 for the standard addition curve.

All forms contain information pertaining to the date, case, units, and reference material number where applicable. Notation utilized on inorganic control forms are listed and defined in Attachment C. In addition to the EPA forms, JTC generated control charts were also used for each metal.

### Organics:

Form II

Water Surrogate Percent Recovery Summary

Surrogate standard determinations are performed on all samples and blanks. All samples and blanks are fortified with surrogate spiking compounds before purging or extracting in order to monitor preparation and analysis of samples. Surrogate spike recovery is evaluated by determining whether the concentration (measured in % recovery) falls inside the advisory recovery limits listed on Form II.

Form II

Soil Surrogate Percent Recovery Summary

Surrogate standard determinations are performed on all samples and blanks. All samples and blanks are fortified with surrogate spiking compounds before purging or extracting in order to monitor preparation and analysis of samples. Surrogate spike recovery is evaluated by determining whether the concentration (measured in % recovery) falls inside the advisory recovery limits listed on Form II.

Form III

Water Matrix Spike/Matrix Spike Duplicate Recovery

An aliquot of a sample matrix is fortified with known quantities of specific compounds and subjected to the entire analytical method in order to indicate the appropriateness of the method for the specific matrix. Matrix spike duplicates are performed to determine the precision of the method. Matrix spike recovery and relative percent difference of duplicates are evaluated by determining whether the results fall inside the Quality Control limits listed on Form III.

Form III

Soil Matrix Spike/Matrix Spike Duplicate Recovery

An aliquot of a sample matrix is fortified with known quantities of specific compounds and subjected to the entire analytical method in order to indicate the appropriateness of the method for the specific matrix. Matrix spike duplicates are performed to determine the precision of the method. Matrix spike recovery and relative percent difference of duplicates are evaluated by determining whether the results fall inside the Quality Control limits listed on Form III.

Form IV

Method Blank Summary

A method blank is an analytical control consisting of all reagents, internal standards and surrogate standards that are carried through the entire analytical procedure. The method blank is used to define the level of laboratory background contamination.

Method blanks results are summarized on Form IV.

A method blank for volatile analysis must contain no greater than five times (5X) the specified detection limit for methylene chloride, acetone, toluene, and 2-butanone. For all other target compounds, the method blank must contain less than the specified detection limit for any single analyte.

A method blank for semi-volatile analysis must contain no greater than five times (5X) the specified detection limit for phthalate esters. For all other target compounds the method blank must contain less than the specified detection limit for any single analyte.

The method blank for pesticide/PCB analysis must contain less than the specified detection limit for any single pesticide/PCB Target Compound.

Form V

GC/MS Tuning and Mass Calibration - Bromofluorobenzene

It is necessary to establish that a given GC/MS meets the standard mass spectral abundance criteria prior to initiating any on-going data collection. For volatile analysis this is accomplished through the analysis of p-Bromofluorobenzene (BFB), for every twelve hour time period.

BFB criteria must be met before any standards, samples, or blanks are analyzed. Form V (GC/MS Tuning and Mass Calibration) shall be completed each time an analytical system is tuned. In addition, all standards, samples, blanks, matrix spikes, and matrix spike duplicates analyzed during a particular tune must be summarized in chronological order on the bottom of the appropriate Form V.

Form V

::

GC/MS Tuning and Mass Calibration - Decafluorotriphenyl Phosphine

It is necessary to establish that a given GC/MS meets the standard mass spectral abundance criteria prior to initiating any on-going data collection. For semi-volatile analysis this is accomplished through the analysis of Decafluorotriphenyl phosphine (DFTPP) for every twelve hour time period.

DFTPP criteria must be met before any standards, samples, or blanks are analyzed. Form V (GC/MS Tuning and Mass Calibration) shall be completed each time an analytical system is tuned. In addition, all standards, samples, blanks, matrix spikes, and matrix spike duplicates analyzed during a particular tune must be summarized in chronological order on the bottom of the appropriate Form V.

Form VI

Initial Calibration Data - Volatile Compounds

Prior to the analysis of samples and required blanks and after tuning criteria have been met, the GC/MS system must be initially calibrated at a minimum of five concentrations to determine the linearity of response utilizing target compound standards. Once the system has been calibrated, the calibration must be verified each twelve (12) hour time period for each GC/MS system.

Using the relative response factors (RRF) from the initial five calibration standards, the percent relative standard deviations (%RSD) is calculated for compounds labeled on Form IV as Calibration Check Compounds. The %RSD for each individual Calibration Check Compound must be less than or equal to 30.0 percent. This criteria must be met for the initial calibration to be valid.

A system performance check is performed to ensure that minimum average relative response factors are met before the calibration curve is used. For volatiles, the five System Performance Check Compounds (SPCCs) are: Chloromethane, 1,1-Dichloroethane, Bromoform, 1,1,2,2-Tetrachloroethane, and Chlorobenzene. The minimum acceptable average relative response factor (RRF) for these compounds is 0.300 and 0.250 for Bromoform. These criteria must be met before sample analysis can begin.

Once the initial calibration is performed, calculate and report the average relative response factor (RRF) and percent relative standard deviation (%RSD) for all target compounds on Form VI (Initial Calibration Data) for each instrument used to analyze samples.

Form VI

Initial Calibration Data - Semi-volatile Compounds

Prior to the analysis of samples and required blanks and after tuning criteria have been met, the GC/MS system must be initially calibrated at a minimum of five concentrations to determine the linearity of response utilizing target compound standards. Once the system has been calibrated, the calibration must be verified each twelve (12) hour time period for each GC/MS system.

Using the relative response factors (RRF) from the initial five calibration standards, the percent relative standard deviations (%RSD) is calculated for compounds labeled on Form IV as Calibration Check Compounds. The %RSD for each individual Calibration Check Compound must be than or equal to 30.0 percent. This criteria must be met for the initial calibration to be valid.

A system performance check must be performed to ensure that minimum average relative response factors are met before the calibration curve is used. For semi-volatiles, the System Performance Check Compounds (SPCCs) are: N-Nitroso-Di-n-Propylamine, Hexachlorocyclopentadiene, 2,4-Dinitrophenol, and 4-Nitrophenol. The minimum acceptable average relative response factor (RRF) for these compounds is 0.050.

Once the initial calibration is performed, calculate and report the average relative response factor (RRF) and percent relative standard deviation (%RSD) for all target compounds on Form VI (Initial Calibration Data) for each instrument used to analyze samples.

Form VII

``

Continuing Calibration Check - Volatile Compounds

A calibration standard(s) containing all target compounds must be performed each twelve hours during analysis. The relative response factor data from the standards for each twelve hours is compared with the average relative response factor from the initial calibration for a specific instrument. A system performance check is made each twelve hours. If the SPCC criteria are met, a comparison of relative response factors is made for all compounds. This is the same check that is applied during the initial calibration (Form VI). If the minimum relative response factors are not met, the system must be evaluated and corrective action must be taken before sample analysis begins.

Form VII is completed for each GC/MS system utilized for each twelve hour time period. Calculate and report the relative response factor and percent difference (%D) for all compounds. Ensure that the minimum RRF for SPCC's meets the required criteria and the percent difference (%D) for each CCC compound is less than or equal to 25.0 percent.

Form VII

Continuing Calibration Check - Semi-volatile Compounds

A calibration standard(s) containing all target compounds must be performed each twelve hours during analysis. The relative response factor data from the standards for each twelve hours is compared with the average relative response factor from the initial calibration for a specific instrument. A system performance check is made each twelve hours. If the SPCC criteria are met, a comparison of relative response factors is made for all compounds. This is the same check that is applied during the initial calibration (Form VI). If the minimum relative response factors are not met, the system must be evaluated and corrective action must be taken before sample analysis begins.

Form VII is completed for each GC/MS system utilized for each twelve hour time period. Calculate and report the relative response factor and percent difference (%D) for all compounds. Ensure that the minimum RRF for SPCC's meets the required criteria and the percent difference (%D) for each CCC compound is less than or equal to 25.0 percent.

Form IX

Pesticide/PCB Standards Summary

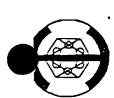
Calibration factors and retention times of standards are monitored during the course of an analysis to demonstrate that the instrument used remains calibrated during the course of the analysis. Results of these calibration checks are reported on Form IX.

Form X

Pesticide/PCB Identification

Data for tentative and confirmed identity of all target compound pesticides are reported on Form X.

APPENDIX F
Chain-of-Custody Records



C Environmental Consultants, Inc.

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30il 921-9790 Xa	SAMPLE TYPE	Grounduater	Groundwater	Groundmater	Gray orderater	Grow when tor	brounduater	Groundwater	Ground water	Groundwater	Groundlyater	Groundwater	Grounduater	TOTAL NUMBER OF CONTAINERS	Relinquished By (Sign)	•	Received By Mobile Lab. Relingd. By Mobile Lab. Date	RECEIVED FOR LABORATORY (Sign)	Jean Jurin
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2176,092,12 9 Relinquished By (Sign) Date Time Received By (Sign) Received By (sign) 000 REMARKS 4.1.87 **7**0★ フの本 70V YA No. of Time CONTS. 4 ٦ RECEIVED FOR LABORATORY (Sign) Relingd. By Mobile Lab. Date Jeens Guried TOTAL NUMBER OF CONTAINERS Greams water SAMPLE TYPE Goonexpersion broundington SUITE L-10 . 4 RESEARCH PLACE . ROCKVILLE, MARYLAND 20850 . (30) 921-9790 broundant or Groundlyter Groundwater Date | Time | Received By Mobile Lab. Date | Time | Received By (Sign) SHIPPED BY (Sign) 3/29 1800 Decen. Nater I SAMPLE LOCATION Offinitor Decen. Water 6PT 6-1 L-9 193 6PT 6-3 3/30 19:00 <u>&</u> 3/24 1400 3/19 11305 3/29 1440 1/29 1800 DATE TIME Relinquished By (Sign) Relinquished By (Sign) 3/29 METHOD OF SHIPMENT SEQ. No. 138+174 3614451 SAMPLE 76112 132 173 140

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		SAMPLE SEQ. No. No.	141	142	143	144	145	146	147	148	149	150	151	152		Relinquishe	Kuning	Relinquisho

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198		3/28	815	3.tel 1	3/28 815 3 tel Ditch 34 of 1946. 189		Surface Water .	/	70%	
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202		3/28	740	site 1	3/28 740 Site 1 14 Main. 1724		surface thater	1	Tox	
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400		3/29	3/24 1800	Docon.	4.	٠ د د	Crounduater	~	TOC, CC	TOC, COD, Or L
305		1/29	7800	3/29 1800 Decon.	on. I	2	Ground and too	)	70°, CC	TOC, COD, ORG
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Lavironmental Consultants, inc.	SEARCH PLACE . ROCKVILLE, MARYLAN	SAMPLE LOCATION	Decon II	I word							Date Time Received By (Sign) $3/10$ 17.00	Date Time Received By Mob	SHIPPED BY (Sign)
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